

How a typical 2-year old plantation of hevea rubber trees appears in the Straits Settlements where a vast acreage is cultivated

## America's First Rubber Show

### Entire Industry on View

Brazil Is By Far the World's Heaviest  
Producer of Automobile Crude Rubber

**M**OST complete in the history of the rubber industry will be the Third International Exhibition of Rubber and the Allied Trades, which will be formally opened next Monday at the Grand Central Palace.

There will be shown samples and stocks of crude rubber of every commercial grade representing all the rubber-producing countries of the world and several in which rubber raising is still in the experimental stages.

There will be a whole floor devoted to crude rubber, another to chemical processes, reclaiming and other secondary subjects and still another to machinery, appliances, manufacturing and tools used in all branches of the industry.

During the exhibition, which will extend from September 23 to October 3, a formal conference of the allied trades with the representatives of the rubber industry will be held.

To the general public the show of crude rubber will probably prove the most attractive section of the exhibition. This is housed on the balcony floor of the building, designated as the third floor. There are two grand divisions, geographically, that produce rubber from the automobile viewpoint. South America and the Amazon Valley is first and the East Indies and Southern Asia, second. Roughly speaking, the bulk of the indigenous rubber comes from the Amazon valley and the bulk of the culti-

vated rubber from Malaya, Ceylon, and the Asiatic countries. Africa and Central America also raise some of both kinds. There is some cultivated rubber marketed from Brazil and some indigenous varieties produced in the East.

Brazil, by all odds, is the heaviest producer of crude rubber at present. In consequence, its show space is impressive and the exhibits go into much detail. The Brazilian show occupies nearly half of the floor. Malaya, Ceylon, Hawaii and a score of other producing sections are represented with magnificent exhibits. All told it is estimated that there are in the neighborhood 190 varieties and grades of crude rubber shown, the whole mass weighing over 150 long tons and worth probably \$350,000.

The setting of the Brazilian exhibit is artistic and effective. On the walls surrounding the displays of the various states are mural paintings showing in panorama scenes along the Amazon from its mouth to the Peruvian Andes and the Bolivian frontier. They depict in pictorial form the country where the rubber grows, and spread out before the pictures are great heaps of the actual rubber that was grown in the territory shown in the pictures.

One pile of rubber from Manaos, representing the product of the State of Amazonas and shown on the north side of the



Type of factory for making rubber for shipment to market of the type conducted in British Malaya by hundreds of great estates

hall, weighs 30 long tons. The most striking element of the exhibit is one biscuit that was specially made for the exposition, weighing 1,450 pounds.

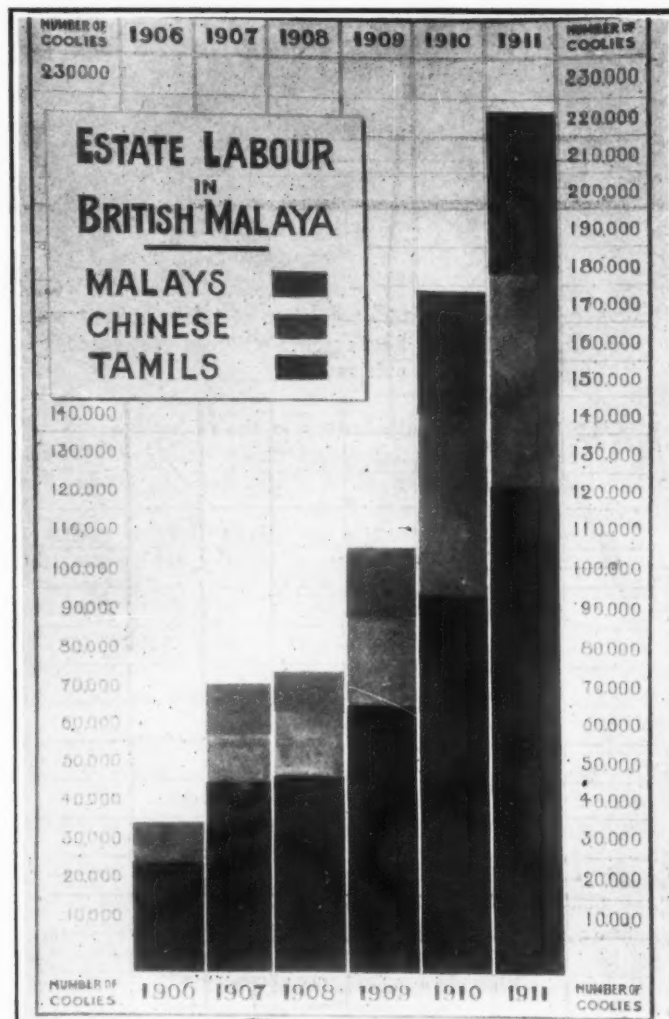
The Brazilian exhibit is under the special patronage of the Minister of Agriculture, Pedro de Toledo, and the government is represented by Rear Admiral José Carlos de Carvallos, Count Candido Mendes de Almeida, Dr. Eugenio Dahne, representative of Dr. de Toledo's department in the United States; Manoel Lebatto, delegate from Amazonas; Argollo Fillio, delegate from Bahia; Oscar S. Moraes, Commercial Museum, Rio de Janeiro, and a number of others.

The chief elements shown in the Brazilian exhibit are lots of up-river fine, which in reality comes in large units; up-river coarse, which is mostly in smaller parcels; islands fine, and islands coarse, in flattened pieces that look something like a muskmelon that has been stepped on by an elephant; Caucho, the product of the castilloa tree, in slabs and balls; Madeira, in large biscuits and diversified forms, and numerous other types of crude.

There will be seen a rubber forest and specimens of trees of all the important types of rubber producers. Tapping, gathering, coagulating and smoking by all the processes in use will be displayed. Dr. Chequeira Pinto, inventor of the Pinto process of coagulating without smoke, will show the details of his system and its possible effect upon the future of the industry.

In the section devoted to cultivated rubber, the exhibits of Malaya, or the Federated Malay States on the Siam peninsula, and those of Ceylon are the largest and most important. The product of these two countries is marketed in London under the general trade designation of Ceylons. The rubber men of Malaya protest against this practice and state that there is a considerable difference between their rubber and that grown in Ceylon. They hold that the rubber of Malaya is better than that of Ceylon and the Ceylon growers take an obviously opposite view.

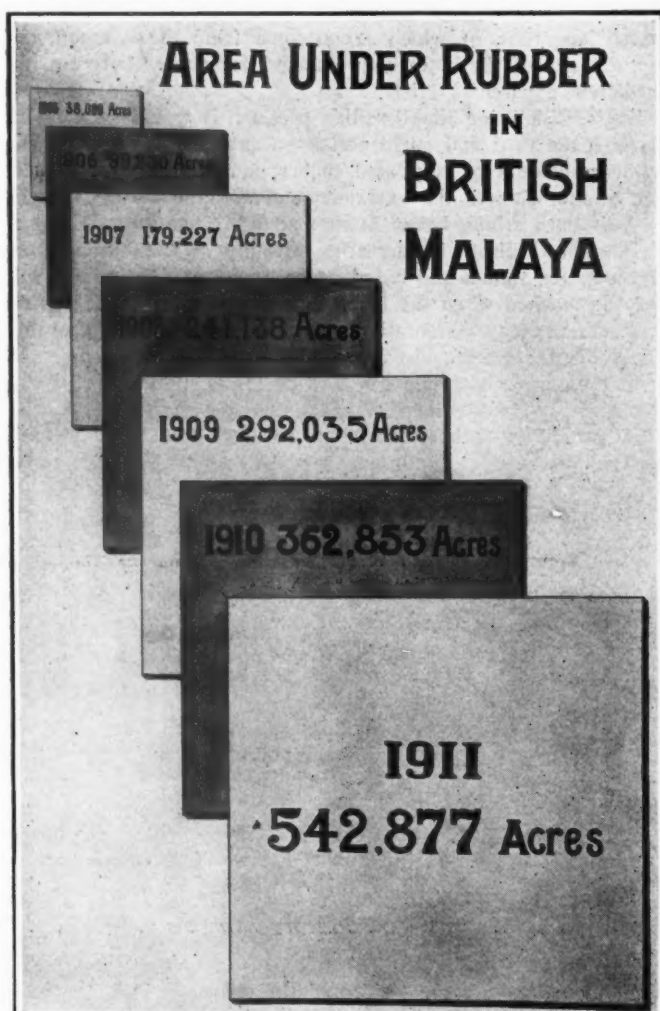
The recent fortnightly auction at London disposed of 1,000 long tons of plantation rubber, setting a new mark for activity that will surely be excelled long before the first of the year as







Packing the crepe according to method used in Perak—Note the difference between this plan and the crudeness of the jungle method



shipments are constantly growing heavier. Last year Malaya produced 23,914,263 pounds of rubber for export, which is about twenty-three times the amount exported in 1906. For 1912 it is estimated that the export total will reach 40,000,000 pounds. This, of course, includes wild rubber as well as the plantation grades.

The stock from which the cultivated Malaya rubber is grown is identical with that in which the Ceylon product had its source. All the cultivated rubber of the Asiatic fields originated from the seeds secretly taken from Brazil by Mr. Wickham nearly 40 years ago.

The main difference between the indigenous and the plantation rubbers may be found in the method of preparing them for market. The wild rubber of Brazil from which up-river fine Para is produced is smoked over fires in which palm nuts are burned. This imparts certain qualities to the Para rubbers that makes them different from the latex treated in any other way.

The plantation rubber is not smoked in biscuit form. The regular process involves smoking, but it is different in many respects from that followed by the seringueiros of Brazil. After coagulation, which is produced by chemical action in many cases, the crepe is hung on racks and smoke from almost any kind of green wood is used to give it the finishing touches.

Opinions differ radically as to details in the methods to be used in producing plantation rubbers and to that fact alone may be charged the lack of uniformity in the product itself. But good progress is being made each season to reach such a stage of production that the grades of plantation rubber will be uniform.

At the forthcoming conference this subject is scheduled for intimate discussion.

As it affects the automobile industry, the rubber trade is of prime importance.

Tires form the chief element of expense in motor car operation. If the price level of the market should reach a basis of \$5 a pound for up-river fine, which would mean at least that amount for pale crepe from the plantations, the cost of auto-



In the foreground are heaps of up-river fine, which is coarse, and in the background heaps of up-river coarse, which is fine

mobile tires would boom. If there is an average of 7 pounds of first-grade rubber in an automobile tire, the cost of the tire to the public would advance tremendously and might reach an average of \$75 per tire, including tube.

This would mean an inevitable and crushing check on the use of automobiles, as the cost of operation would then run up to 8 cents a mile for tires alone.

Such an eventuality as \$5 a pound for rubber seems improbable in the present view of things, but it should be remembered that in the spring of 1910 the price stood for a time at \$3.10 a pound and the situation was exceedingly tense.

The heads of the various big plantation exhibits claim that the introduction of the plantation factor in the rubber industry has saved the automobile business as a broad, general and commercial element in civilization. Their reasoning is as follows:

Leaving aside the question as to how much plantation rubber is used for tire making, the mere fact that the supply of plantation rubber is available for many of the purposes to which

Para was formerly put releases a big demand from the Amazon rubber.

Prior to the time the plantations came into commercial bearing on a large scale, the price of rubber advanced under the insistent demand from the automobile industry. Today that demand is represented by the annual consumption of 70,000,000 pounds, or about 31,000 long tons. If the current production is 90,000 long tons, of which 40,000 come from the Amazon valley, the size of the automobile demand for rubber becomes immediately apparent.

Exerted alone on the Brazilian product, it would send prices through the roof and put a period on automobile use. But the immense amount of cultivated rubber now coming on the market counterbalances the extra demand and the result is to be seen in Para selling below \$1.20 a pound.

Plantation rubber is increasing steadily at the rate of 100 per cent. per annum and has done so since 1906. The limit will only be reached when the labor supply is fully employed to its economic capacity. Plantation men state that this will probably happen in the measurable future, but that in the meantime the system of checks and balances born of the plantations will force the price of rubber somewhat lower than the current level.

They state that rubber can be grown at 50 cents a pound with profit under present conditions and that when the labor problem is ultimately solved, the cost will only advance a trifle.

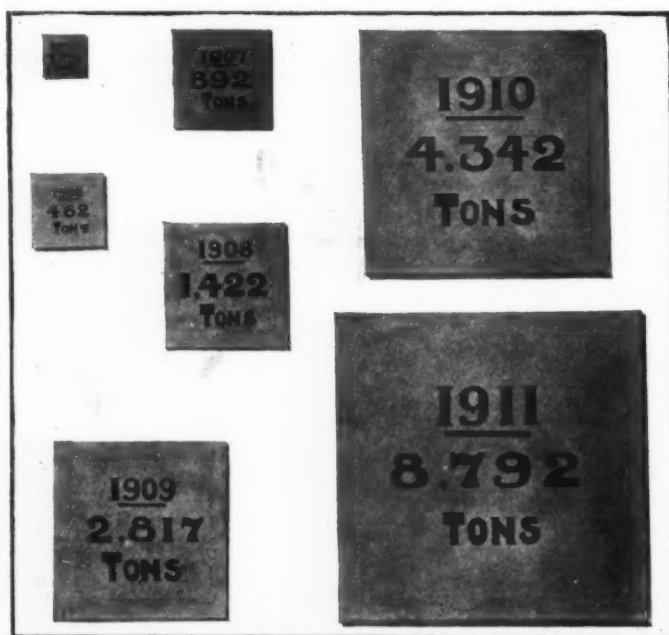
In the meantime the Brazilian government is working vigorously to increase production by cultivating the different varieties of rubber trees and by a gigantic system of subsidies. Mexico, already a factor in the world's problem of rubber, will certainly swell the total stock; Central America is being exploited in this regard also and in the tropical forests of Africa the brains and energy of nations are centered in the single object of increased production.

The cumulative effect of all this energy, pointed at one goal, will be a tremendous advance in the amount of rubber grown.

In that view of the situation it might seem that the price was due for a severe fall.

Right there, however, enters still another element of the problem. If the world's rubber production reached 200,000 tons a year, the new uses to which rubber will be put will keep the price steady, even if it be at a lower level.

Rubber is used universally by all civilized nations and the only reason it is not in use in hundreds of new ways at present is that the supply is too small and the price too high for economic service.



How the shipments of Malaya have increased



If the supply becomes greater and the price lower, the uses will spread like a prairie fire.

This must have the effect of steadying prices and make for a broad general market.

From the viewpoint of the automobile industry the aspect of rubber is reassuring.

While exact figures are exceedingly difficult to get, the approximate production of the world in 1912 may be estimated about as follows:

	Long tons
Amazon valley .....	40,000
Elsewhere in South America.....	2,000
Central America .....	5,000
Africa .....	10,000
Plantations .....	20,000
Elsewhere .....	5,000
Miscellaneous, low grades.....	8,000
Total .....	90,000

The American tire industry alone accounts for over 16,000 tons this year.

Among the most interesting things to be seen in the crude rubber exhibit is the pictorial display. Each section has a wealth of photographic beauty and utility. In the Brazilian section, aside from the mural paintings, there are hundreds of photographs to show conditions in the jungle, at the collecting centers, shipping points and at various stages from the wilderness to civilization.

In the Malaya and Ceylon exhibits it is safe to say that next to the remarkable showing of the cultivated rubber in all stages, the display of pictures will be most attractive. Leonard Wray, who is in charge of the Malaya exhibit, shipped in sixteen big packing boxes of photographs showing every imaginable phase of the rubber industry in his country. Many of the accompanying pictures for this article were reproduced from the originals that hang in the section over which Mr. Wray presides.

As will be seen from this article, they are different from other tropical pictures. They seem to carry with them the mysterious air of the Straits Settlements, but they are all new, having been taken only a short time before shipment, and show actual conditions in that wonderful land.

According to official reports of 1911 there were 542,000 acres in Malaya devoted to the raising of rubber. This year it is expected that the total acreage in cultivated rubber will be about 1,000 square miles. As the trees average rather more than 200 to the acre, the total number of trees in Malaya would be in excess of 14,000,000. When those trees are all in mature bear-



Exhibits of crude rubber in one of the Brazilian Sections

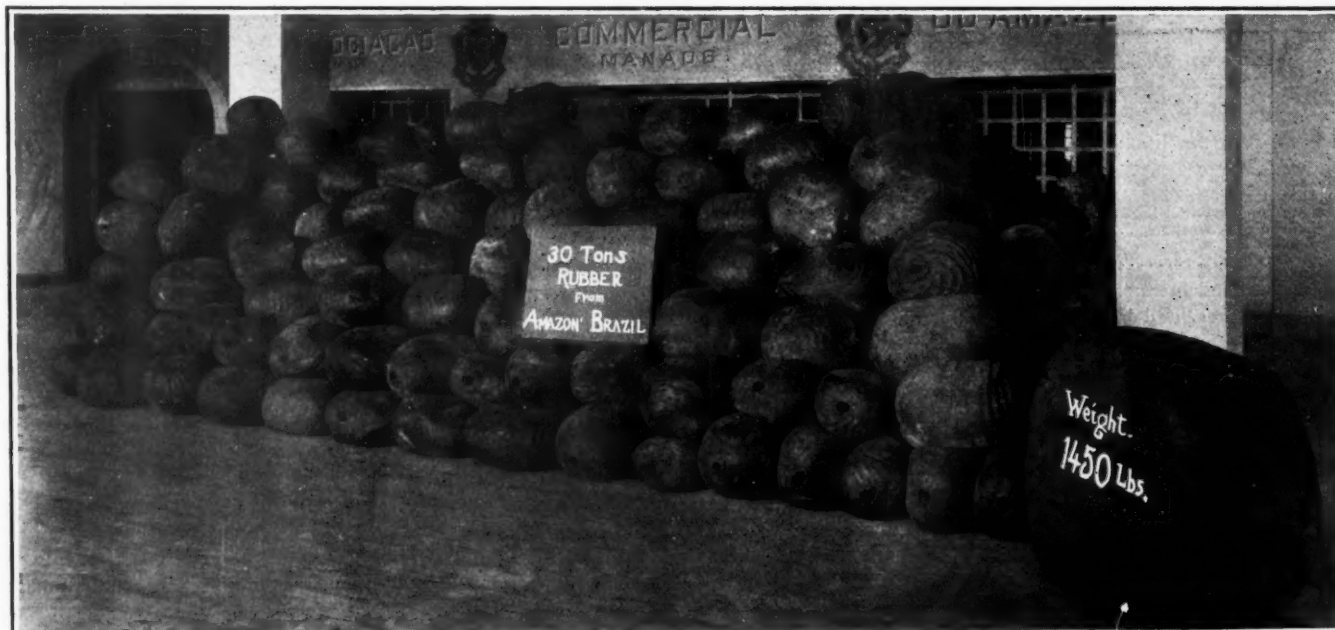
ing, the product of Malaya will reach a stupendous figure, even without additional acreage.

In the pictures an idea is conveyed of selected phases of the industry, showing the young plantations, the jungle, road conditions, mature fields and many other interesting points.

As far as Africa, Mexico and Central America are concerned, the showing at the exposition is representative, although these countries are not so important from the automobile viewpoint.

Dr. Walter Strong presides over the Hawaiian and Philippine exhibits. Rubber cultivation in Hawaii is of recent date, but it is said that conditions are ideal for it in a considerable territory of the archipelago. The trees planted in Hawaii are of Brazilian stock and the crude rubber exhibited is similar in structure to the specimens shown from Malaya and Ceylon. The form of the product is different, as the crepe is pressed into

(Continued on page 590)



Impressive show of Commercial Association of Manaus, 30 tons of high-grade crude in giant bescults as they came from the jungle

# United States Motor Company Awaits Action of Its Creditors

**Court Has Adjudicated Parent and Constituent Companies as Bankrupts—No Court Action Against Sales Offices**

**Factories Continue Operating as During the Past 90 Days—Brush and Thomas Units Closed—Many Bankers Among Creditors—\$5,000,000 Cash Required to Rehabilitate the Company**

SINCE the establishment of the receivership of the United States Motor Company the affairs of the concern appear about as follows: No plan of reorganization has been formulated and adopted so far. Until such a plan is agreed upon there will be nothing to present to any underwriter. The terms of the agreement will be arranged as quickly as possible, as all the factors in the problem realize that if anything is to be done it must be done without loss of time.

While the total indebtedness of the company is \$12,200,000, nobody in trade circles looks for the dissolution of the company piecemeal as a result of the present action. To continue the business of the company will require additional capital to the amount of \$5,000,000, to be raised by either assessment on the stock or by the issue of additional securities. The alternative is a sale under the order of the court.

All of the manufacturing units, with the exception of the Brush company, are continuing in operation practically the same as they have been for the last 90 days and the various retail selling organizations throughout the different cities are also continuing in operation, although the question of ancillary receiverships for them is being considered.

## Indebtedness Exceeds \$12,000,000

The situation so far as reorganization is concerned is developing slowly. There are two classes of creditors and each class is susceptible to division into several subordinate headings. The real question of reorganization will undoubtedly turn on the agreement or disagreement of the creditors as to participation. Summarized, the liabilities of the company may be divided as follows:

Due to banks.....	\$4,200,000
Due to merchants.....	2,000,000
Due on debentures.....	6,000,000
Total.....	\$12,200,000

The total indebtedness is divided into two classes, the first of which is represented by commercial paper bearing two indorsements. The other class has paper with only one indorsement. As an instance, it may be cited that the debentures bear only the signature of the parent company. Another example of the one-signature paper is where one of the constituent companies of the United States Motor Company issued a note to secure payment for money advanced or goods purchased for its use.

The two-signature paper consists of notes issued by the parent company and indorsed by one of the constituent units, or that issued by the constituent company and indorsed by the parent organization.

Practically all of the claims of the merchandise creditors are based upon more or less of the one-signature paper.

In case agreement among the interested parties cannot be

reached as to the status of the different grades of paper, the matter will undoubtedly come within the view of the court for definite construction of the claims of each side. At present the single major question that must be settled is with regard to agreement among the creditors themselves.

Under the receivership action there are two courses open to the company. The first is reorganization under some plan that will take care of the creditors and allow the company sufficient working capital to manufacture and sell its product. The other is a sale under order of the court.

Regarding the first course it may be said that the company requires about \$5,000,000 additional capital with which to satisfy the claims and to furnish working capital. This may be raised in two ways, the one by assessment of the present stock and the other by the sale of additional securities either to the present creditors in payment of their claims or on the open market. In the latter case the proceeds could be used to take up the paper.

The committee which is formulating plans for reorganization has not finished its drafting of the proposed plan. Anything that has been said so far about the amount of the assessment or the method proposed for levying it is branded as premature by the committee, nevertheless, the report has been circulated throughout the industry and in the financial district that the favored plan is for an assessment of from \$20 to \$25 a share.

According to recent statements coming from the United States Motor Company and the brokers who have made a specialty of handling its stock issues in the market, fully half of the stock of the company is alleged to be held by the following list of stockholders:

Anthony N. Brady, James C. Brady, J. S. Bache, Caroline W. Astor, Benjamin Briscoe, Samuel P. Colt, Frank Briscoe, H. Holbrook Curtis, Eugene Meyers, Jr., Thomas F. Ryan, Herbert L. Satterlee, Harry Payne Whitney, Richard Irvin, John Jacob Astor's estate and Charles G. Stoddard.

If the holdings of this group represents half the outstanding stock they would be required to put up \$2,300,000 on a basis of \$20 a share. The complete amount that could be raised would be about \$4,600,000. If the rate of assessment were \$25 a share the total proceeds would be \$5,750,000. The latter amount would be sufficient, in the opinion of those most intimately connected with the company, to place it on a sound footing. Naturally, there may be some difficulty in executing such a plan as was prematurely announced.

The alternative proposition of issuing new securities for sale on the market or in payment of creditors involves a court adjustment as a condition precedent, or a continuance of the company as at present, depending upon the terms of the ultimate agreement.

The holders of the two-signature paper feel that they have some claim to seniority, but that claim is sharply at issue with



the position taken by the holders of the one-signature paper. They insist that if there is to be another stock issue that a certain proportion of cash shall be paid to them. The smaller faction among the creditors is unwilling to take that view of the situation unless the same terms apply to them as well.

If no agreement is reached before the court sale, there are still several plans that may be followed to reach a reorganization. The assets may be bid in by a purchaser at auction; composition of the debts might be accomplished on a variety of bases, or in the last analysis, the individual assets of the company might be disposed of on the block.

Some form of reorganization is the only result that is seriously considered, but what it will be depends on a multitude of factors.

W. E. S. Strong and Robert Walker, who were named receivers, have also been named as ancillary receivers in each of the states where the company operated manufacturing plants. There are about forty retail selling companies, located in various cities and states, all of which belong to the parent company by stock ownership or otherwise and the question of ancillary receiverships in all those states is being considered at the present time.

The Providence Engine Company, manufacturer of steam engines and automobile parts, specifically running gears, crankshafts and machined parts, has been petitioned in involuntary bankruptcy on behalf of local creditors at Providence. The company is owned through its stock issues by the United States Motor Company. The preliminary hearing of the matter is set for September 18 in the United States District Court at Providence and if the matter takes its usual course Messrs. Strong and Walker will be named as receivers. As an individual corporation, the Providence company is said to be in excellent financial shape.

Except the Brush Runabout Company all the manufacturing plants of the United States Motor Company continue in operation to about the extent that they have for the past 90 days. The receivers obtained an order of court to advance money for the payrolls of the various plants from the general funds of the company and to make provision for administration. There is little activity, however, in any of the plants and there has been much less since the last of the 1912 product was completed and marketed.

In last week's issue of THE AUTOMOBILE a citation from the report made by Percy Martin on the various companies stated that in Mr. Martin's opinion the greatest necessity prevailed for active operation of the plants, so that their organizations might be retained and preserved. Now, it is stated by those most closely allied with the project of reorganization, that the arrangements will have to be made with the utmost speed in order to protect all the interests. They are united on the proposition that if reorganization is to be effected on favorable terms it must be made within 90 days.

The relations of the United States Motor Company with the E. R. Thomas Motor Company, of Buffalo, have been shrouded in more or less mystery for over a year. The facts in the case are that the United States Motor Company acquired practically the whole of the Thomas stock about a year ago, exchanging its own securities for the certificates of the Buffalo company and furnishing some other consideration.

The ownership of the Thomas company was kept a sort of state secret and officially it was denied repeatedly by officers of the United States Motor Company during the past year.

The Thomas company went into the hands of a receiver last month after F. R. Humpage, president at that time, failed to exercise an option to purchase the company from the United States Motor Company. The reason for the failure of Mr. Humpage to take over the Thomas was that he was unable to float his new securities in the condition of the money market or could not obtain the services of an underwriting house to handle the transaction.

The capitalization of the Thomas company is \$2,400,000, of

which \$400,000 is 7 per cent. cumulative preferred. The remainder is common. There is no bonded debt. It is understood that Mr. Humpage succeeded in getting all the support required except \$400,000.

As the Thomas company is now in bankruptcy court, the matter of considering it as in any way affecting the affairs of the United States Motor Company has not been pressed.

E. R. Thomas, founder of the company, is a creditor to a material amount.

At the time Judge Charles M. Hough received the bill of complaint filed on behalf of the Brown & Sharpe Manufacturing Company which resulted in the receivership, he noted the fact that the main questions involved in the bankruptcy action would require the utmost care in unraveling.

The court commented on the fact that the problems presented in the bill of complaint were exceedingly complex and charged the receivers to use great pains in reaching the exact facts. Hence, all the official statements made to the public have been couched in what might be termed glittering generalities.

No schedules of assets and liabilities have been filed so far, but work is being done on their preparation. The banking debts of the embarrassed company amount to about \$4,200,000, and, as is well known, the Central Trust Company figures as the heaviest creditor. But the mere fact that it heads the list with claims of about \$1,400,000 does not mean that it stands to lose that amount because each of the aggregate amounts owing to the various creditors may represent a large proportion of paper bearing two signatures, worth approximately its face value. Thus, the lists of creditors that have been published fail to tell the real story because they do not show the equities applying to any case.

In the specific case of the Central Trust Company, the proportion of two-signature paper involved is very high and the same might be said for other banking creditors who require the indorsement of one of the solvent constituent companies on the paper of the parent company, or vice versa, before entertaining it as a discount proposition.

The largest merchandise creditors also adopted this precaution to a considerable extent, and while the concerns that head the list appear to be involved for material sums, the actual fact is that they are protected almost as well as the bankers.

### Complete Order of Court

The formal action of the court is outlined in the appended order which declares that the companies are bankrupt, in that that they are unable to meet their maturing obligations. The order authorizes the receivers to proceed on broad lines to conserve the property and make detailed report to the court.

The following order has been entered in the United States District Court, Southern District of New York, by Judge Hough:

And now, on this 12th day of September, 1912, this cause came on to be heard upon the bill of complaint and the answer of the defendants this day filed, admitting the allegations of the said bill, and joining in the prayer thereof; upon consideration whereof,

Now, upon motion of the solicitors for the complainant, and the defendants by their solicitors consenting thereto, it is

Adjudged and decreed that the defendant companies and all of them are now unable to meet their respective maturing indebtedness and that none of the said defendants are or will be able to meet same or any substantial part thereof at the maturity of the said indebtedness, or for a considerable time thereafter; that the complainant and the other creditors of the defendants are without adequate remedy at law and that said complainant is now entitled to the relief granted hereby, and that it is necessary for the protection and preservation of the respective rights and equities of the complainant and all other creditors of the defendants and each of them that the properties and business of all of the said defendants should be administered as an entirety in this suit through receivers to be appointed by this Court, in order that the rights and equities of all of the said creditors may be preserved, determined and adjudicated in this suit and the property of said defendants and each of them applied to the payment of the claims and equities of their respective creditors, pursuant to such adjudication as may hereafter be made herein; and that it is necessary that receivers of all of the defendants herein and of their respective properties should be appointed forthwith, with the powers herein granted. It is further

#### ORDERED, ADJUDGED AND DECREED AS FOLLOWS:

That William E. S. Strong and Roberts Walker be and they hereby are appointed receivers of the defendants, United States Motor Company, Alden-Sampson Manufacturing Company, Brush Runabout Company, Columbia Motor Car Company, Dayton Motor Car Company, and Maxwell-Briscoe Motor Company, and each of them, and of all of the properties owned or controlled by or in which the said defendants or any of them

have any ownership or interest whether such property be real, personal, or mixed, of whatsoever kind and description and wheresoever situated, including all lands, real estate, buildings, premises, property and appurtenances owned, controlled, leased or operated by the said defendants or any of them, and all offices, furniture, fixtures, materials and supplies, finished product and product in the course of manufacture, books of account, records and other books, papers and accounts, cash on hand or in bank or on deposit, things in action, credits, stocks, bonds, securities, shares of stock in the corporations described in said bill of complaint as "selling companies" and all shares of stock, certificates of equitable interest and other certificates representing any interest in any property and all other securities of whatsoever character owned by the defendant companies or any of them on or in which they or any of them have any interest or which they or any of them control directly or in directly, deeds, leases, contracts, muniments of title, bills and accounts receivable, rents, issues, profits, tolls and income accruing and to accrue, as well as all interest, easements, privileges, franchises and appurtenances, and all assets and property of every kind, character and description whatsoever; with full authority immediately to take possession of and, until the further order of this Court, to carry on, manage and operate the said properties and to continue the business of the said defendant companies, in their discretion, until the further order of this Court, and to exercise the authority and franchises of the said defendants, to preserve and protect their properties in proper condition and repair, and to perfect the title and possession in and to said properties, and in their discretion to employ and discharge and fix the compensation of all such officers, managers, agents and employees as may be necessary for the proper discharge of their duties as such receivers and to make such payments and disbursements as may be needful or proper in so doing; to purchase, for cash or credit, such supplies, materials or other property as may be necessary or advisable in connection with the administration of the property and assets of the defendant companies; to sell the product or properties of the defendant companies either for cash or on credit, as may be usual or advisable in the business of the said companies or otherwise; to collect and receive rents, income, tolls and profits of the property of all the defendant companies; to make, subject to and upon the granting of further orders of this Court, such appropriate payments for and on account of accruing taxes, assessments, interest on mortgages, insurance, ground rents or other necessary charges as may be expedient or requisite to preserve the properties and assets of the defendant companies or any of them, and subject to and upon the granting of such orders, to pay and discharge any current obligations for labor and like charges as may be decreed by this Court to be entitled to priority. It is further

ORDERED that said receivers be and they hereby are authorized and empowered to institute and prosecute, defend, compromise or adjust, intervene in or become parties to such suits, actions and proceedings, at law or in equity, including ancillary proceedings in state or federal courts, as may in their judgment be necessary or proper for the protection, maintenance and preservation of the property and assets of the defendant companies, and likewise to defend all suits, actions and proceedings instituted against them as receivers or against said companies or any of them, and also to appear in and conduct the prosecution or defense of any suits or adjust or compromise actions or proceedings now pending in any court by or against the said defendants or any of them, the prosecution, compromise or defense of which will in the judgment of said receivers be advisable and proper for the protection of the property placed in their charge or of the interests and rights of creditors and stockholders connected therewith; and generally to do all acts and things necessary or proper to be done to protect, maintain and preserve the properties of which they are hereby appointed receivers for the benefit of the creditors and stockholders of the defendant companies, with leave to apply from time to time, whenever necessary and as they may be advised, for further orders from this Court touching all and singular their rights and duties in the premises. Said receivers are further authorized to settle with, compromise or adjust, collect from or make allowance to debtors of the defendant companies and generally to do such things and enter into such arrangements, compositions, extensions or otherwise with debtors of the defendants as they, the said receivers, may deem advisable. And said receivers are authorized to enter into such arrangements with or take any such action in reference to the affairs of the companies described in the bill of complaint as "selling companies" as they, the said receivers, may deem advisable, including the power to said receivers to bring actions at law or in equity, whether original or ancillary, or otherwise against such "selling companies," and further including the power to said receivers to continue to operate or liquidate such "selling companies" in whole or in part and generally to incur such expenses, make such disbursements and do such actions in connection with said "selling companies" as they may deem advisable. It is further

ORDERED that the said receivers keep and maintain all the properties and assets of each and every of the defendant companies separate and distinct from those of the other defendant companies, and to do such things and preserve and keep such records as shall maintain and preserve separately at all times the identities of the respective properties of the respective defendant companies and to open and keep separate books of account and records for each and every of the defendant companies so as to show at all times the separate business transactions of the separate defendant companies, and to take and preserve proper vouchers for all payments made by them in connection with the discharge of their duties as such receivers. It is further

ORDERED, that the several bonds of each of the said receivers in the sum of one hundred and fifty thousand (\$150,000.00) dollars, conditioned that he will well and truly perform the duties of his office and duly account for all moneys and property which may come into his hands, and abide by and perform all things which they shall be directed to do, with sufficient sureties to be approved by a Judge of this Court, be forthwith filed with the Clerk of this Court. It is further

ORDERED AND DECREED, that each and every of the defendant companies and each and every of their officers, directors, agents and employees, and all other persons, including creditors and stockholders of any of the defendant companies be and they hereby are required and commanded forthwith upon demand of the said receivers, or their duly authorized agent or agents, to turn over and deliver, to said receivers, or their duly constituted representatives, any and all books of account, vouchers, papers, deeds, leases, contracts, bills, notes, accounts, moneys and all other properties of or controlled by any of the defendant companies, real or personal, in his or their possession or control. It is further

ORDERED AND DECREED, that the said defendant companies and each and every of them and each and every of their officers, directors, agents and employees, and all other persons claiming to act by, through, under or for said defendants, or any of them, and all other persons, firms and corporations, including creditors and stockholders of each and all of the defendant companies and including all sheriffs, marshals, constables and their agents and deputies, and all other officers are hereby adjointed and restrained from removing, transferring, disposing of or attempting in any way to remove, transfer or dispose of or in any way interfere with any of the properties, assets or effects owned by or in the possession of any of the said defendants, and all said persons, firms and corporations are hereby enjoined from doing any act whatsoever to interfere with the posses-

## St. Louis Tire Factory

J. A. Swinehart Interested with St. Louis Capitalists in \$500,000 Concern to Make Automobile Tires

Stock of the Company Is Entirely Subscribed and Factory Arrangements Practically Completed

ST. LOUIS, MO., Sept. 16—A factory and distributing station for automobile tires is to be established in this city. The capital of \$500,000 for the new enterprise was raised among St. Louisans, except that supplied by J. A. Swinehart, of Akron, O. The stock is completely subscribed and the company will probably be incorporated sometime this week. It is stated that arrangements practically have been completed for a building in the central part of the city near to automobile row.

The value of the annual output of the new factory is to be \$1,000,000, according to the promoters who also stated that raw materials can be brought to St. Louis as cheaply as they could to Akron and that when the Panama Canal is opened St. Louis will enjoy an advantage over any eastern location. Rubber comes from South America for the most part and Africa and with the opening of the canal could be laid down in St. Louis on attractive terms. The new company will feature two products, besides making the full line of solid and pneumatic tires and inner tubes. The Krots, a solid tire for light delivery wagons and electric broughams, will be one of the tires featured. The other feature is a new method of making pneumatic tires on a hollow car mold, instead of solid car mold with an internal expansion of steam to make every thread of the fabric receive the same uniform tension. The new St. Louis factory will be the sixth to manufacture solid tires in the United States.



sion and management by said receivers of any of the properties of any of the said defendants or from in any way interfering with said receivers in the discharge of their duties or from doing any act to interfere with the administration and disposition in this proceeding of the affairs and assets of the defendants or any of them, and all creditors and stockholders of each and every of the said defendant companies, and all other persons, firms and corporations are hereby adjointed from instituting or prosecuting or continuing the prosecution of any pending actions, suits or proceedings at law or in equity against any of the said defendant companies and from levying any attachments, executions or other process upon or against any of the properties of any of said defendant companies, or from taking or attempting to take into their possession any of the said properties of any of the said defendant companies, and from issuing or causing the execution or issuance out of any court of any writ, process, summons, replevin or any other proceedings for the purpose of impounding or taking possession of any of the property of any of the said defendant companies. It is further

ORDERED that the said receivers be and they hereby are directed within ten days from the date hereof, to mail to each and every creditor and stockholder of the defendant companies as the same may appear upon the books of the said defendant companies, a copy of this order and of the bill of complaint herein; such mailing to be in a securely sealed envelope, postage prepaid, and to be addressed to the said stockholders and creditors of the defendant companies at the last post office address known to said receivers and such service by mail is hereby decreed to be due, timely, sufficient and complete service of notice of this proceeding upon all such creditors and stockholders for all purposes. And it is further

ORDERED that all such creditors of the said defendant companies and each and every of them be and they hereby are directed to file with the receivers at their office and place of business, Broadway and Sixty-first street, Manhattan, New York City, within sixty days from the date of this order, a duly sworn statement of all and any such claims they may have or assert against the defendant companies or any of them. Such statement shall be verified before any officer authorized to administer oaths by the law of the state where said claim is verified, and such statement of claim shall, where the same is evidenced by any written instrument, have the same attached to it. And it is further

ORDERED that the said receivers shall on the 28th day of October, 1912, at 11 o'clock in the forenoon report in the Post Office Building, Borough of Manhattan, City of New York, to the undersigned Judge of this Court as to the affairs, assets, debts and business of the defendants and at such hearing all and any such matters as to the administration, disposition and sale of the assets and the affairs of the defendants, or any of them, and as to the continuance of the receivership, and as to the continuance of the business of the defendants and as to all or any of the matters alleged and as to any of the relief prayed for in said bill of complaint as may be presented by any parties in interest will be considered, and such further orders will be made in respect to any of the said matters, at such hearing or any adjournments thereof, as to this Court shall seem proper and equitable.



## Favor Truck Warranty

**Fourteen Members of N. A. A. M.  
Formally Adopt 90-Day Guarantee—  
Few to Accept Stipulations**

**1 Year Considered Too Long—Defects Will Show  
Themselves in the Course of 3 Months**

WHEN the uniform truck warranty was framed last spring and presented to the trade for acceptance, modification or denial, it was expected that the response would be immediate and practically unanimous in favor of adopting it as a whole. As has been outlined, the chief provision of the warranty was the specification that its terms covered only 90 days of service, or 90 days of ownership in the hands of purchasers.

There has been some delay on the part of the industry to take up the proposition and according to an announcement made public last week by the National Association of Automobile Manufacturers, fourteen of its members have actually adopted the standard warranty. There are thirty-three members of the association devoted to automobile truck making, thus leaving nineteen to take affirmative action.

Of the nineteen, five companies have declined to adopt the form as recommended, alleging that they do not consider it sufficiently liberal in its terms. A few companies want the limit taken off as far as time is concerned.

Outside the association the standard warranty has met with a good reception. Fourteen companies have adopted it and nine have agreed to adopt it in case a majority favor it.

The opinion of those who want the 90-day guarantee is that 1 year is too long, because if proper material or workmanship is lacking in a particular truck the defects will show within 90

days and that they should be protected from ignorant and careless operation.

The following tabulation shows the companies that favor the warranty as presented:

Members N. A. A. M.	Non-members
Baker Motor Vehicle Co.	Auglaize Motor Car Co.
Federal Motor Truck Co.	Brown Commercial Car Co.
Gramm Motor Truck Co.	Chase Motor Truck Co.
Kelly Motor Truck Co.	Champion Wagon Co.
Knox Automobile Co.	Dorris Motor Car Co.
Locomobile Co. of America.	Geneva Wagon Co.
Packard Motor Car Co.	Gramm-Bernstein Co.
Peerless Motor Car Co.	Harwood-Barley Mfg. Co.
Pope Mfg. Co.	Hatfield Auto Truck Co.
Reo Motor Car Co.	Kearns Motor Car Co.
Selden Motor Vehicle Co.	Sanford Motor Truck Co.
United States Motor Co.	Stewart Motor Corp.
The Waverley Co.	U. S. Motor Truck Co.
The White Company	Veerac Motor Truck Co.

In addition to these twenty-eight companies there are four members and nine non-members who approve the warranty just as it is written and will adopt it if a majority of truck makers do so. They are:

Members	Non-members
Nordyke & Marmon Co.	C. L. Barker
Ohio Electric Car Co.	Bowling Green Motor Car Co.
Walter Motor Truck Co.	Chicago Pneumatic Tool Co.
Willys-Overland Co.	Dayton Auto Truck Co.
	Marathon Motor Works
	Moreland Motor Truck Co.
	Poss Motor Co.
	Sandusky Auto Parts & Motor Truck Co.
	H. E. Wilcox Motor Car Co.

## Canadians to Make Tires

MONTREAL, QUE., Sept. 16—So great has been the growth of the automobile tire market that it is now stated on good authority that the Canadian Rubber Company contemplates erecting a large factory for the exclusive manufacture of tires. The factory, which, according to the report, is to be built across the border, will be equipped with all the modern improvements for the manufacture of rubber tires of all sizes.

The factory of the Canadian Rubber Company in Montreal has been found insufficient to supply the demand, and for a short time has not been turning out tires in such large quantities as formerly. However, with the erection of a fine new plant on the American side, the Canadian Rubber Company intend to make a special line of automobile tires and market them in the United States.

## Nyberg Seeks Hoosier Site

INDIANAPOLIS, IND., Sept. 16—Henry Nyberg, president of the Nyberg Motor Works, Anderson, has confirmed a report that the company is negotiating for a factory site in this city, with a view to moving its manufacturing plant to Indianapolis. The company manufactures the Nyberg line of pleasure and commercial cars.

Since locating in Anderson some time ago, the company has found the need for expansion, not possible in its present location. For several days negotiations have been under way for a site here. It is understood several prospective sites have been visited and are under consideration.

## Bankrupt Wins Agency Suit

ELMIRA, N. Y., Sept. 16—In the action of the Foreman Brothers Electric Company, of Paducah, Ky., which concern recently went into bankruptcy, against the American Motor Sales Company, of Elmira, N. Y., for \$25,000 damages for alleged breach of contract in that the Elmira motor concern refused to allow the Kentucky company to handle its automobiles after the insolvent condition of the latter was ascertained, Judge John R. Hazel in United States District Court convening in Canandaigua, N. Y., last Saturday, directed the jury to return a verdict of \$1,250 for the Kentucky corporation, which amount was deposited at the time the arrangement was made. The Elmira automobile firm consented that judgment against it be made for the amount of the deposit.

## Only Motors Shown to Fire Chiefs

DENVER, COLO., Sept. 18—That gasoline and electric motors have almost supplanted the horse as means of propulsion for fire-fighting equipment is emphasized more strongly than ever at the fortieth annual convention of the International Association of Fire Engineers, which opened here yesterday. For the first time in history of fire apparatus exhibitions held in connection with these conventions, there is not one single piece of horse-drawn apparatus shown at exhibit at auditorium.

Motor equipment has crowded out the horse. Of the \$100,000 worth of motor apparatus on exhibition most interest among 500 fire chiefs was created by the monster Gorham pump shown by the Seagrave company. It is claimed that it will deliver 1,000 gallons per minute at 20 pounds pump pressure. It has a multiple stage centrifugal turbine pump with 165-horsepower, six-cylinder motor, Ahrens-Fox combined steam and electric pump regulator, steamer on battery front truck. The American La France 65-foot aerial gasoline electric four-wheel drive. The Webb aerial truck raises the ladder in 4 seconds. It is a four-wheel drive gas-electric.

ALBANY, N. Y., Sept. 16—According to an opinion rendered here by Attorney-General Carmody, justices of the peace throughout the state must turn over to the state treasurer the full amount of fines collected for criminal violations of the law in relation to the use of public highways by motor vehicles.

The question was raised by State Treasurer Kennedy, who received the residue of a fine, after deduction had been made for statutory fees by Justice Isaac Allen, of Southport, Chemung County.

## Trade News of the Week

### Sales and Advertising Convention Plans Are Being Formulated for Big Session at Indianapolis

#### Crude Rubber Lower as Result of Heavy Offerings at Recent Auction—Other News of the Industry

INDIANAPOLIS, IND., Sept. 16—The convention of salesmen and advertising men to be held here October 8-9 will attract a big attendance, according to all indications. The movement has been endorsed by the manufacturers and arrangements are being shaped up for the affair on a major scale.

A tentative program was outlined at a meeting at the Columbia Club, of a committee composed of Homer McKee, advertising manager of the Cole Motor Car Company; Paul Richie, representing the Marmon; D. B. Williams, advertising manager of the American Motor Car Company, and Guy Simon, vice-president of the Pathfinder company.

Representatives from each of the automobile factories in Indianapolis are meeting every night at the Columbia Club to appoint permanent committees and to perfect arrangements for the convention.

W. D. Nesbit, of Chicago, will preside over the convention as permanent chairman, according to present plans. An address of welcome will be delivered by Charles A. Bookwalter. Among the prominent advertising men who will make addresses on salesmanship will be Elbert Hubbard, of East Aurora, President Sheldon, of the Sheldon School of Salesmanship, John Lee Mahin, of the Mahin Advertising Company, Leroy Pelletier, Detroit, director of advertising for the Flanders; Martin Kelley, of the Fuller Advertising Agency, General Manager Deeds, of the National Cash Register Company, and General Manager Laskar, of Lord & Thomas.

Those who are promoting the convention believe that 1,000 automobile salesmen will attend.

Harry L. Archey, of the Archey-Atkins Company will have charge of the automobile parade to be held on Tuesday morning, October 8. The addresses by the several speakers on the science of salesmanship will be delivered at the afternoon sessions of the convention. A "Speedway" dinner, to be served in "laps," will be held Tuesday evening. The Wednesday morning program will be given at the Indianapolis Motor Speedway. A novelty will be an automobile masquerade, the machines being disguised with floral decorations. Demonstrations in skillful driving will be given on the Speedway track by representatives of local factories.

#### Crude Rubber Trifle Lower

Crude rubber sagged again during the past week, the movement being of small proportions. The immense amount of rubber marketed at the last fortnightly auction was offered at a time when the demand was a trifle slacker than it has been and the result was a small decline all along the line. Since then the receipts have been up to the average and the whole list has followed the downward trend of plantations. Locally the trade was quiet but of good size. Manufacturers bought little at first hand. The current level is on a basis of \$1.16 a pound for up-river fine.

#### Jonz-Advance Merger Planned

LOUISVILLE, KY., Sept. 16—At a meeting of the stockholders of the American Automobile Corporation, of New Albany, Ind., which recently took over the plant of the American Automobile Manufacturing Company, a proposition to merge with the Ad-

vance Power Company, an automobile manufacturing concern of Chicago, was considered this week. The board of directors was authorized to do what it thinks best. It is understood that the merger will be consummated within the next month and the capital stock will be increased from \$150,000 to \$1,000,000.

The new concern will be known as the Advance Motor Car Company. It is planned to move the Chicago concern to New Albany where a 1,000-pound truck with a double friction drive to sell for about \$400 will be manufactured. A salesroom will be maintained at Chicago. It is understood that C. D. Morris, of Chicago, president of the Advance Power Company, will hold the same position in the new concern.

At the meeting J. W. Baxter, of New Albany, Ind., was elected director in the American Automobile Company, to succeed L. A. Böli, Jr., retired.

#### Gotham's Motor Fire Apparatus

Fire Commissioner Joseph Johnson, of the New York Fire Department, includes in his tentative budget for 1913, an item of \$46,504, for maintenance of the motor equipment of the department. He notes the fact that the department now has fifty-nine motor vehicles in service and that eighty-seven more will be installed early in 1913.

The motorization of the New York department so far exceeds that of any other city in the world and its completion to the last fire-fighting unit will ultimately be accomplished according to the commissioner.

#### Oakland Host to Its Managers

DETROIT, Sept. 16—The Oakland Motor Car Company entertained 125 branch managers, distributors and representatives at

#### Automobile Securities Quotations

Movements in the market for automobile and accessory securities were irregular during the past week. The feature of course was the sharp drop in the prices of U. S. Motor common and preferred just before and after the receivership was announced. The common broke down under small offerings to 50 cents a share bid but little stock changed hands at the bottom. The preferred sold for \$2 a share for a few minutes. Since then, there has been a gradual improvement in both issues. The standard shares moved within a limited range, the general tone being steady. General Motors yielded a fraction in each issue.

	1911		1912	
	Bid	Asked	Bid	Asked
Ajax-Grieb Rubber Co., com.	..	..	150	175
Ajax-Grieb Rubber Co., pfd.	..	..	95	100
Aluminum Castings, preferred	..	..	100	102
American Locomotive, common	38	39	43 1/2	44 1/2
American Locomotive, preferred	106	107	108	109 1/2
Chalmers Motor Company	..	..	148	155
Consolidated R. T. Co., com.	5	10	13	16
Consolidated R. T. Co., pfd.	10	20	50	60
Diamond Rubber Company	..	..	..	..
Firestone Tire & Rubber, com.	179	181	275	280
Firestone Tire & Rubber, pfd.	105	107	107 1/2	108 1/2
Garford Company, pfd.	..	..	99	100
General Motors Co., common	42	43	38	39
General Motors Co., preferred	80	82	79 3/4	81
B. F. Goodrich Co., common (old)	243	245	78	79
B. F. Goodrich Co., preferred (old)	118 3/4	119 3/4	109 1/4	109 3/4
Goodyear Tire & Rubber, com.	230	240	333	337
Goodyear Tire & Rubber, pfd.	105	107	107	108
Hayes Manufacturing Company	..	..	..	93
International Motor Co., com.	..	..	26	27 1/2
International Motor Co., pfd.	..	..	83 3/4	84 3/4
Lozier Motor Company	..	..	43	50
Miller Rubber Company	..	..	135	150
Packard Motor Company, pfd.	..	..	105 1/2	107
Peerless Motor Company	..	..	115	120
Pope Manufacturing Co., com.	42	46	36 1/2	38
Pope Manufacturing Co., pfd.	72	77	72	74
Reo Motor Truck Company	8 1/2	10	9 1/2	10 1/2
Reo Motor Car Company	23 1/2	25	22	24
Studebaker Company, common	..	..	42 1/4	42 3/4
Studebaker Company, preferred	..	..	94 1/2	96 1/2
Swinehart Tire Company	..	..	98	100
Rubber Goods Company, com.	85	95	100	105
Rubber Goods Company, pfd.	100	105	107	110
U. S. Motor Company, common	30	32	1	1 1/2
U. S. Motor Company, preferred	70	71	6	7
White Company, preferred	..	..	107	109



the factory last week. A banquet was tendered the visitors on Saturday evening at the Pontchartrain while in the afternoon the factory was inspected and plans for the coming season were discussed.

The following were among those present:

J. W. Martin, Minneapolis; H. L. Hornberger, San Antonio, Texas; H. L. Leech, Philadelphia; L. F. Smith, Atlanta, Ga.; M. D. Stone, Nashville, Tenn.; J. G. Kreig, Oskaloosa, Ia.; C. L. Barnes, Birmingham, Ala.; H. G. Sperring, St. Louis, Mo.; W. H. Head, Omaha, Neb.; W. J. Sutcliffe, Waterloo, Ia.; T. N. Shambaugh, Kansas City, Neb.; Theodore Brinkman, Kansas City, Mo.; R. R. Hall, New York City; C. Briggs, East Orange, N. J.; V. N. Weidman, Jersey City, N. J.; R. J. Henderson, Toronto, Ont.; G. O. Wildhack, Indianapolis, Ind.; C. W. Tremain, Fort Dodge, Ia.; H. C. Turner, New York City; Dean Schooler, Des Moines, Ia.; S. L. Stone, Buffalo, N. Y.; L. W. Smith, New Haven, Conn.; C. E. Hoffman, Buffalo, N. Y.; Frank O'Dell, Pittsburgh, Pa.; W. L. Cameron, Dallas, Tex.; Will Tracey, Detroit; J. F. Montgomery, Detroit; F. C. Wood, Cleveland, O.; R. A. Wadsworth, Chicago, Ill.; J. F. Walsh, Boston, Mass.; W. C. Gray, Buffalo, N. Y.; Frederic Eaton, Pittsburgh, Pa.; R. A. Creek, Milwaukee, Wis.; H. L. Bunting, Cedar Rapids, Ia.; Frank Remsen, Atlanta, Ga. President Thomas Neal, General Motors Company, G. E. Daniels, J. B. Eccleston, F. H. Berger, E. H. Tinsman, J. H. Newmark, T. W. Wilson, L. P. Stone, H. H. Thatcher, H. A. Bauer, J. S. Hull, T. D. Culberhouse, A. N. Greene, H. R. Voit, N. E. Wahlberg, F. O. Ronk and K. B. Alexander.

### Price as Bar to Synthetic Rubber

Dr. Carl Duisberg, director general of the Farbenfabriken Company, of Elberfeld, was one of the principal speakers at the session of the Eighth International Congress of Applied Chemistry in New York, Monday, and in treating the subject of synthetic rubber, stated that in his opinion while the production of synthetic rubber has been attained from the viewpoint of chemistry, it is still a long way in the future as a commercial possibility.

He has used automobile tires made of the substance and said that he had traveled 4,000 miles upon them. Price and other factors as well are the main reasons for the delay in synthetic rubber reaching a commercial level, according to Dr. Duisberg.

### Market Changes for the Week

Few materials changed their prices during the past week despite the fact that a satisfactory degree of activity prevailed throughout the market. Tin rose \$.12 per 100 pounds. Steel, copper and lead remained at their old quotations, that of beams and channels being nominal during the latter half of the week. Cottonseed oil declined \$.20, gradually decreasing in price throughout the week and closing at \$6.16. Up-river declined during the week \$.02 owing to lack of trade.

Material	Wed.	Thurs.	Fri.	Sat.	Mon.	Tues.	Week's Change
Antimony, per lb.	.07½	.07½	.07½	.07½	.07½	.07½	.....
Beams and Channels, 100 lbs.	.....	.....	.....	1.51½	1.51½	1.51½	.....
Bessemer Steel, Pittsburgh, ton	24.00	24.00	24.00	24.00	24.00	24.00	.....
Copper, Elec., lb.	.17 11/20	.17½	.17½	.17½	.17 11/20	.17 11/20	.....
Copper, Lake, lb.	.17½	.17½	.17½	.17½	.17½	.17½	.....
Cottonseed Oil, August, bbl.	6.46	6.45	6.45	6.42	6.36	6.16	-.20
Cyanide Potash, lb.	.19	.19	.19	.19	.19	.19	.....
Fish Oil (Menhaden)	.33	.33	.33	.33	.33	.33	.....
Gasoline, Auto, 200 gals. @	.21	.21	.21	.21	.21	.21	.....
Lard Oil, prime	.85	.85	.85	.85	.85	.85	.....
Lead, 100 lbs.	5.125	5.05	5.05	5.05	5.05	5.10	+.02½
Linseed Oil	.69	.69	.69	.69	.69	.69	.....
Open-Hearth Steel, ton	25.00	25.00	25.00	25.00	25.00	25.00	.....
Petroleum, bbl., Kansas crude	.70	.70	.70	.70	.70	.70	.....
Petroleum, bbl., Pa. crude	1.60	1.60	1.60	1.60	1.60	1.60	.....
Rapeseed Oil, refined	.68	.68	.68	.68	.68	.68	.....
Rubber, Fine Up-river Para	1.17	1.16	1.16	1.16	.....	1.15	-.02
Silk, raw Ital	.....	4.15	.....	.....	4.15	.....	.....
Silk, raw Japan	.....	3.77½	.....	.....	3.77½	.....	.....
Sulphuric Acid, 60 Beaumé	.99	.99	.99	.99	.99	.99	.....
Tin, 100 lbs.	48.50	48.88	49.25	49.25	49.75	48.62½	+.12½
Tire, scrap	.09½	.09½	.09½	.09½	.09½	.09½	.....

## Britons Planning Reprisals

### Consider \$25,000,000 Company to Check American Invasion of England and a Protective Tariff

#### Alco Truck Scales Sierras and is Now on Last Leg of Tour to Pacific Under Capacity Load

LONDON, Sept. 18—Representatives of nearly a score of British motor car makers determined at a meeting held here to form a manufacturing company capitalized at \$25,000,000 to manufacture low-priced cars in the United Kingdom to compete with the present cars of American manufacture. S. F. Edge, Lord Montagu, of Beaulieu, and the Duke of Westminster took leading parts in the discussion which grew out of the invasion of British territory by the American manufacturers.

The concrete purpose of the company will be to make cars that can be sold for from \$1,000 to \$1,250 that will compare with present American cars of like prices in service and appearance.

In addition, the manufacturers under the leadership of the Duke of Westminster will ask the British government to impose a prohibitive tariff on American automobiles.

In urging protective action, Lord Montagu said that he could not denounce the American cars as cheap and bad, because he knew them to be cheap and good.

The conclusions of the meeting were that the formation of a great British company might check the sale of American cars in Britain and that the right kind of a tariff would stop importation.

### Alco Truck Mounts Sierras

SACRAMENTO, CAL., Sept. 18—The Alco transcontinental truck, bearing a 3-ton load from Philadelphia to a consignee at Petaluma, arrived at the capital of California yesterday after crossing the crest of the Sierra-Nevada mountains. The final climb over the continental backbone required the surmounting of a grade that averaged 20 per cent. for over 2 miles. The crew presented a letter from the Governor of Pennsylvania to Governor Johnson and the arrival in Sacramento was marked by numerous official functions and celebrations.

The schedule calls for the truck to make the run to San Francisco today and the final stage of the journey to Petaluma, which lies north of that city and across the Golden Gate will be made on Friday.

At San Francisco a big demonstration has been prepared and the crew will be tendered a typical San Francisco welcome. The detailed facts and figures covering the whole run are to be prepared immediately showing, in addition to the usual facts, the cost per motion minute of operation from end to end.

### Ward Bids \$40,000 for King Assets

According to announcement made by Sidney S. Meyers, attorney for the merchandise creditors of the King Motor Car Company, of Detroit, Artemus Ward, one of the heaviest creditors of the embarrassed concern; has made a formal offer of \$40,000 for the property of the company. Mr. Meyers says that he will recommend that the offer be accepted. In case such a basis of settlement is reached the dividend to the creditors will amount to about 17 per cent.

Should the deal be consummated on the basis of Mr. Ward's offer, it is not certain about the future activities of the company. It has been suggested that the work undertaken by the factory shall be continued under the new order of things as heretofore conducted.

# Milwaukee's New Course

## Promoters Have Had to Rush Preparations for the Big Races But Track Is Rapidly Rounding Into Shape

Compares Very Favorably With the Savannah Course on Which the Contests Were Staged Last Year

MILWAUKEE, WIS., Sept. 16—For the first time away from their native heaths, the grand prix of the Automobile Club of America and the William K. Vanderbilt, Jr., cup will be contested for in the Middle West next week over a brand new 8-mile road circuit in the town of Wauwatosa, Milwaukee County, Wis., provided by the Milwaukee Automobile Dealers' Association. In keeping with custom, the M. A. D. A. has hung up two additional trophies which are bound to become of international note, the Col. Gustave Pabst trophy and the Wisconsin Challenge cup, deeded by Milwaukeeans for the light and medium car events. The program of this great cup competition will be:

Friday, September 20—The first race for the Col. Gustave Pabst trophy at a distance of approximately 205 miles, and the first race for the Wisconsin Challenge trophy at a distance of 164 miles.

Saturday, September 21—The eighth annual competition for the William K. Vanderbilt, Jr., cup at a distance of 287 miles.

Monday, September 23—The fourth race for the Automobile Club of America's gold cup, the grand prix, at a distance of 402 miles.

For this, the first international racing competition in the very heart of the American continent, as convenient of approach from the Pacific as of the Atlantic Coast and intervening territory, the promoter, the M. A. D. A., has hung up \$20,250 in gold coin to supplement the valuable gold cups as prizes. The grand prix alone will be accompanied by a purse of \$10,000 in gold, one-half of this going to the winner. The winning of the Vanderbilt will bring to the victorious car and driver a purse of \$3,000, given by the association, while \$1,000 is offered to the winner of both Pabst and Wisconsin Challenge cups. The M. A. D. A. has gone previous promoters one better by offering a fourth cash prize in every event, and has in addition tacked a fifth prize in the grand prix competition.

### Unlimited Speed Possibilities

Approximately \$25,000 has been distributed over a little more than 8 miles of the finest country highways to be found in the vicinity of Milwaukee, forming a cup race course which, although entirely new, should have unlimited possibilities of speed, at the same time offering opportunity for spectacular work to satiate the hunger of the thousands of newly-made road racing enthusiasts whose knowledge of cup competition has been gained from reading the accounts of the Long Island and Savannah races of past years.

Friday was set as the day for the opening of the course to the drivers for first practice. This leaves but four days of practice running, but the crack pilots already here believe this sufficient, as all who run in the last three events will have two additional days for tuning up.

The M. A. D. A. was obliged to go at break-neck speed to complete the course in the desired shape by Friday of last week.

The measures of protection and safeguarding are better than at any previous road racing carnival. Thirteen companies of militia, taken from the First, Second and Third Wisconsin Infantry, National Guard, will alternate in police duties on the 3 days of racing. Sheriff Arnold, in whose police jurisdiction the town of Wauwatosa lies, will be on hand with 100 special

sworn deputies, while Chief of Police John T. Janssen, of Milwaukee, has provided a squad of 100 uniformed policemen taken from the regular city patrol force. The militiamen will be clothed and equipped as for actual warfare, and will bivouac on the infield of the course during the period from Friday until Tuesday. They will number 1,050 men, divided into three squads, one for each day.

There will be accommodations for all who come, even if the crowds number 150,000. The Milwaukee Automobile Club, which will act in one of the principal rôles of entertainers, is prepared to provide board and room for several thousand visitors on its 4-acre clubhouse grounds, 4 miles from the center of the city. Invitations have been issued to every member of the A. A. A. to partake of its hospitality during race week.

Construction of the grandstands, judges' stands, press tower, bleachers, the pit sections, and other building work was begun Sunday morning. The start and finish line is on Burleigh street, midway between the North and South Fond du Lac roads. The grandstands will be on the south side of the home-stretch, the pits being directly in front of the box sections, on the right-hand side of the drivers. The judges', press and administration buildings will be on the north side.

### Four Straightaways Form Course

The Wauwatosa course, on which the races will be run, is a quadrangle lying within the township of Wauwatosa, Milwaukee County, Wis. Four straightaways, each pair approximately parallel, all of them as straight as an arrow, have been selected to form the cup course. While most of the road racing courses of America and Europe have either touched or passed through a town or city, the Milwaukee course is the first which actually touches, at any point, the city limits of a large metropolis, such as Milwaukee is with its 410,000 inhabitants.

The course runs due northwest from City Limits turn for a distance of approximately 3 miles along North Fond du Lac road, an old military trail which formed the principal exit from the settlement of Milwaukee 75 years ago.

The turn from Town Line into South Fondy is a hairpin, the inside of the round before it was touched being a bare 45 degrees. This was considerably increased by cutting away a triangle of 45 feet, but with the improvement it will form the most difficult curve of all to be negotiated.

In comparison with the Savannah course, over which the grand prix has been run several times, and the Vanderbilt cup for the first time on Thanksgiving Day of 1911, the Milwaukee course looks very good. It is only one-half as long, or 8 miles against 17. Instead of winding about in a tortuous circuit, as the Savannah course does, Milwaukee has a four-legged speedway that is almost a parallelogram, all sides of which are straight. The famous Waters road straightaway at Savannah offers nothing better than the North Fond du Lac road stretch at Milwaukee.

In reconstructing the roads used for the Vanderbilt course the Milwaukee Automobile Dealers' Association called upon the Wisconsin State Highway Commission for the services of its engineering staff and experts. In this manner it has been possible to build approximately 8 miles of uniform highway—uniform as to width and uniform as to construction. The two long straightaways have been good macadam roads for years. The two short stretches were plain dirt roads.

The Milwaukee course was constructed with a view to the holding of the international road races upon it for a period of 3 years, beginning with 1912. The contracts between the property owners and the M. A. D. A. are for that length of time.

CHICAGO, Sept. 16—The Chicago Motor Club has undertaken the promotion of the most sensational reliability ever carded in this country—a trip around Lake Michigan, a journey which has been made only by a few cars and which is expected to produce interesting results. Part of the way is through almost virgin territory, and especially in the wilds of Michigan and the northern part of Wisconsin the going will be far from easy.



# Painting the 1913 Car

## Improved Systems of Putting Machines Through the Shop More Quickly— New Colors in Vogue

### Drying Room Is Now An Important Factor in the Up-to-date Automobile Paint Shop

UNLESS all signs fail, the automobile painter is to be the man of the hour during the coming year. His importance as a factor in the automobile industry has of late increased enormously. His services have become indispensable. He is recognized as both an artist and as an artisan. In handling the new styles and designs of automobiles which the coming year promises to disclose, his work will be more critically examined and studied than ever before.

Finer colors are to be employed in larger variety. New surface treatment, therefore, must follow. A higher grade of finishing will be called for. Other details scarcely less important will demand attention, so that, taken all in all, the selling value of the 1913 car is largely in the hands of the painter.

Quicker systems of putting the car through the paint shop—speaking now of both new and old work—are now in vogue. Pure raw linseed oil and white lead were for many years pronounced the invincible mediums through which the best and finest class of painting could be developed. Oil was pronounced by no less an authority than Dr. Dudley, late chemist of the Pennsylvania Railroad, as the life of the paint. It is largely, and with reason, so regarded today. But there has been a readjustment of the quantity used. A new order of pigment and oil combination has come into being. It has been found that with a reduced quantity of both oil and lead, the demand for quicker results, without sacrificing a necessary measure of durability, may be well satisfied.

#### Less Oil Is Used As a Binder

The use of metal bodies for automobiles has served to develop quick ways of painting and finishing such surfaces. Less oil as a binder for the primary coatings is one of the time-saving items connected with the painting of the aluminum or sheet steel body. The oven, or drying room, which is coming to be an important adjunct of the automobile paint shop, is also serving to facilitate and quicken the system of painting. These rooms need not be classed as ovens or hot rooms. Correctly they are drying rooms. They are, first, close rooms from which, except during periods of ventilation, the outside air is excluded, and into which it is possible to introduce a volume of dry, hot air sufficient to hasten the drying of all paint and varnish mediums. This is the main mission of the drying room. There are heating or drying ovens in use which at a temperature varying from 125 degrees to 300 degrees practically bake the paints and varnishes onto the surface.

With the simple heating or drying room, conditions and results are so modified that no doubt need be entertained as to the outcome of the work produced by the quicker method. The drying room merely expels the major portion of the naturally prevailing moisture through the introduction of the dry, warm air, making it possible to get any part of a coat of paint or varnish dry in a comparatively short time.

In the automobile paint shop efficiency has been increased and will doubtless be further increased by making specialists of the men employed. In other words, a certain man or number of men do the varnishing of the car bodies; still other men attend to the chassis; certain men put on color and create color combinations; others work up the surface, putting on the rough

coats, sandpapering, rubbing roughstuff, etc. By thus specializing a given amount of work is produced at less cost. Of course, this specializing plan can only be worked out where the business is large enough to employ several men and to permit of a systematic and uniform daily output of work.

For roadsters and the lighter-weight touring cars the lakes of dark, rich shades are to be popular. What may be known as Manhattan red promises to be a favorite. It is a vivid but beautiful red and is produced by first mixing 2 parts Indian red with one part English vermilion, reducing with pure turpentine, and applying to the surface. Over this ground apply two coats of No. 40 carmine, using for the second coat 1-2 ounce of carmine in a full pint of elastic rubbing varnish. Empire State red is produced by mixing one part No. 40 carmine with two parts English vermilion. Lay this combination over a peachblow color. For the second coat of the red mix 3-4 ounce of the pigment in one pint of varnish. Either one of the above colors appear to fine advantage if striped with lines of gold and black, or simply with lines of black.

Motor car red may be made by glazing the Empire State red with No. 40 carmine, which heightens and intensifies the effect. Of the lakes pure and simple, there are three or four which are about certain to get the popular vote. These are purple, scarlet, crimson and Munich lake. They require fine surfaces and perfect ground or preparatory colors.

#### Colors Should All Be Durable

Car buyers and owners who are particular about the colors employed should get assurance from the builder or painter as to the quality of the colors, both preparatory and final, used. These wonderfully handsome lakes are of little value unless durable. The scarlet lake is seen best over a ground of English vermilion. Munich lake may be used over a deep wine color, and crimson lake needs a deep red ground color. A plain black ground is about right for purple lake. All the lakes require a delicacy of treatment not usually applied to the less transparent pigments. Surfaces cannot well be too nice for them, and the greatest care must be exercised in bringing the colors along until they are finally safe under varnish.

Deep, rich greens and blues are to lead during the coming year as panel colors for the heavier type of car. In this prolific family of colors the old favorites remain sure and steadfast in the affections of the car users. Brewster, Merrimac, Quaker and olive green are really as beautiful as any of the greens can well be. They are strong and permanent colors and under attractive striping colors, such as gold, black, ivory white and carmine, they are unsurpassed. Automobile buyers at the coming New York shows may with profit, and a promise of future satisfaction, give these dark, noble green colors due consideration. Likewise the blues are to be seen in all their glory during next winter and the season following.

Ultramarine blue, transparent, but rich in color, requires a very good ground for best display. Dark brown or plain black are, in fact, exceedingly good colors over which to coat the ultramarine blue. Blues are colors hard to develop in the full purity of their original shade. Clear rubbing varnish applied over blue practically ruins its color purity. Over the blue, as developed on the surface, apply two coats of rubbing varnish, for good work, using a couple of ounces of blue to each pint of varnish. By this practice the tone and purity of the color are maintained. Rub these coats with flour pumicestone and water and put the finishing coat of varnish directly over this. In this way magnificent blue surfaces have been turned out of New York, Philadelphia and Boston paint shops for some time past.

Automobile buyers may also with profit study the charms of Richelieu, automobile, Twentieth Century, and cobalt and royal blue. Russian body blue offers something unusually fine for touring car panels.

Then there are the grays—automobile, battleship, cadet, Howard and Hudson gray—all strikingly handsome and all cool and clean and remarkably effective.

# Digest of the Leading Foreign Journals

## Advanced Type of Hydraulic Drive, With Important Improvements, When Applied To a Motor Truck By Noted Designer Results in Radical Departures Exemplifying Practical Difficulties—German Automobile Finance

**H**YDRAULIC Motor Truck Transmission—Dr. Hele-Shaw, of England, well known from his connection with the development of British steam trucks and gasoline motor trucks since the inception of the industry relating to this class of vehicles and more widely known as identified with the multiple disk clutch bearing his name, has devised an hydraulic transmission mechanism which has been used successfully for operating the steering gear of ships, particularly in the case of the Diesel motor ship *Selandia*, and also for actuating the working elements in cranes, presses and machine tools with intermittent action. For training guns on shipboard this mechanism has also been found useful. It has been applied to the driving of motor trucks, and for this purpose the relations between its various parts have taken the forms shown in the accompanying illustrations which are reproduced after *Engineering* of London.

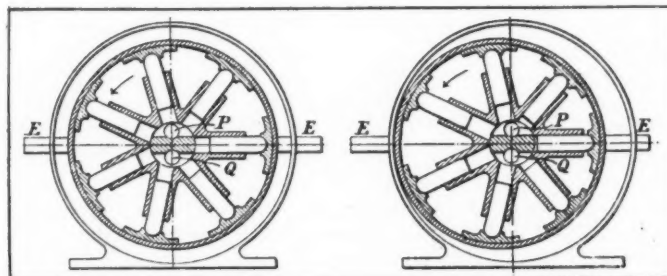
The principal elements are (1) a pump transforming the rotation of the gasoline motor shaft into a movement of fluid under pressure in one channel and a return movement of fluid under suction in another channel; (2) conduits taking the fluid to the driving wheels of the vehicle and back to the pump; (3) an hydraulic motor in each of the driving wheels transforming fluid pressure into rotation of the wheel and sending the fluid back to the pump; (4) a system comprising an oil tank, pipes and valves and an auxiliary pump for gathering the fluid which leaks from the mechanism and returning it to the latter and (5) a control mechanism for varying the pump stroke and thereby starting, reversing, braking the vehicle, or changing the gear ratio of the transmission.

Figs. 1 and 2 are diagrams indicating the principle of the pump. A disk-like body with seven radial cylinder bores can be rotated directly from the motor shaft and turns upon a fixed shaft which is placed in continuation of the motor shaft and is formed with two lengthwise bores P and Q connecting with an upper and a lower port cut crosswise into the shaft just in line with the middle of the cylinder disk where short ducts lead to the bottoms of the cylinder bores. Pistons for the cylinders are pivoted each in a so-called slipper block, all of which blocks are formed with relatively long curved sliding surfaces and placed in a ring-shaped guide, spaced apart in this ring by the pistons being held in alignment with their respective cylinders. The guide ring itself is free to revolve, being mounted upon roller bearings in a frame, and the frame can be moved horizontally to either side within the casing which encloses the whole mechanism, being mounted between parallel guide bars formed upon the interior walls of this casing. The diagrams, Figs. 1 and 2, do not show the roller bearings or the sliding frame, but the handles EE symbolize the horizontal lateral motion which can be given to the ring-shaped guide. When the latter is held concentrically with the cylinder disk, as in Fig. 1, it is evident that cylinders, pistons and guide ring can all be revolved together without causing the pistons to move in the cylinders, and the fluid in the bottom portions of the cylinders, as well as in the ports and the conduits P and Q, remains at rest. This is thus the neutral posi-

tion of the gear. But, when the ring-shaped guide is pushed to one side, as in Fig. 2, some of the pistons are pulled outward in their cylinders while others are pushed in. When now the cylinder disk is rotated in the direction of the arrow, the cylinders will draw fluid from conduit P while they are filling up and will force fluid into conduit Q while they are discharging. They will be drawing when passing above the line EE and discharging below this line, and it is evident that the cylinders must be in connection with the upper port in the fixed shaft all the time while they are causing suction, as well as with the lower port when expelling the fluid, and both these ports must, therefore, be large enough to be in connection at the same time with one-half of the total number of cylinders. As the cylinders are not free to work while passing the bridge of metal separating the two ports, and a certain excess resistance is set up under this condition, an odd number of cylinders is preferable to an even number which would bring two cylinders opposite the bridge at the same time.

It is notable that the pumping action remains the same whether the ring-shaped guide revolves in its roller bearings or the blocks in which the ends of the pistons are pivoted revolve slidingly in the ring-shaped guide. Tests of the efficiency of the mechanism in two different forms have shown, however, that the freedom of the guide ring to revolve greatly assists the blocks to move with those speed variations which are forced upon them by the equable speed of the cylinders in conjunction with the eccentric arrangement of the piston pivots. In other words, in practice, the guide ring revolves and the blocks move a little forward and then a little backward in the guide ring at each revolution.

The exact arrangement of the mechanical parts mentioned is shown in Fig. 3, which represents a vertical cross-section through the axis of the motor shaft, and of the fixed shaft as well. The sliding frame shows only at TTTT. RR and RR are the two roller bearings mounted in it and in which in turn is mounted the ring-shaped guide U marked in full black. It will be noticed that this guide is made in two halves bolted together, and is provided with flanges affording complete guidance for the blocks S in which the piston pivot pins D are journaled. The motor shaft A, it is seen, is coupled to one end of the hub of the cylinder



Figs. 1 and 2—Diagrams of the general working principle in Hele-Shaw rotary pump



body C by a conical joint secured by a nut and is separated by a small interval, which is utilized as a lubrication channel, from the fixed shaft, with the bores P and Q, which is hardened and ground to a close turning fit in the rest of the hub of the cylinder body.

It is also noticed that the cylinder body is formed with extensions between the cylinder bores, as indicated in the lower part of the drawing, and that these extensions serve to limit the possible motion of the blocks S, so that after all in the practical construction provision is made for compelling the guide ring to revolve in its roller bearings rather than having the blocks free to slide around in the guide ring. Two slots in the outer portion of cylinder walls, in conjunction with suitable shaping of the blocks S allow the pivot pins to get nearer to the center of the mechanism than would be possible without them, thus making for compact design as well as improved guidance of the blocks in the guide ring.

The rear of the exterior casing is screwed upon the fixed shaft, with a simple washer separating it from the cylinder body, and at its front the casing is formed to receive a ball-bearing G in which the hub of the cylinder body revolves, and protection against leakage of fluid from this ball-bearing is sought by means of a conical flange clamping the motor shaft in a packed joint, which seems to be the only joint of this kind in the pump mechanism.

When the sliding frame is pushed over to one of the side walls

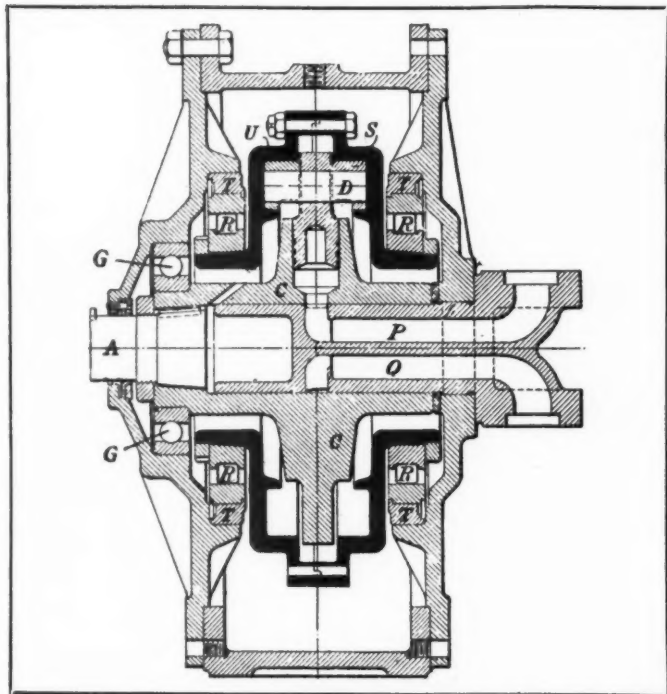


Fig. 3—Axial cross-section of a Hele-Shaw rotary pump as applied to the driving of motor trucks

of the casing, giving the guide ring its maximum of eccentricity, the pump will of course be in adjustment for working with full stroke. Any intermediate position of the sliding frame gives a shortened stroke and therefore a slower circulation of the fluid and a lower gear ratio. By pushing the sliding frame across to the other side of the casing, the direction of the fluid movement is reversed. Q becomes the suction channel and P the pressure channel. The pump is then in adjustment for reverse driving. In practice the reverse is limited to a low gear ratio by limiting the movement of the control lever, Fig. 7.

It has been found that when a pump of this construction works at high speed and full stroke a noise is produced which is caused by hydraulic shock taking place each time a cylinder is put in communication with the discharge port at the beginning of the inward stroke of the piston. The sudden variation in pressure, especially if air is entrained with the oil used as fluid, is likely

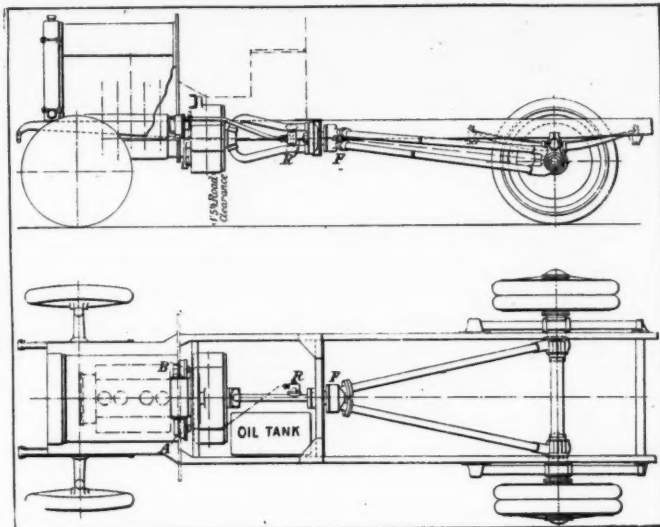


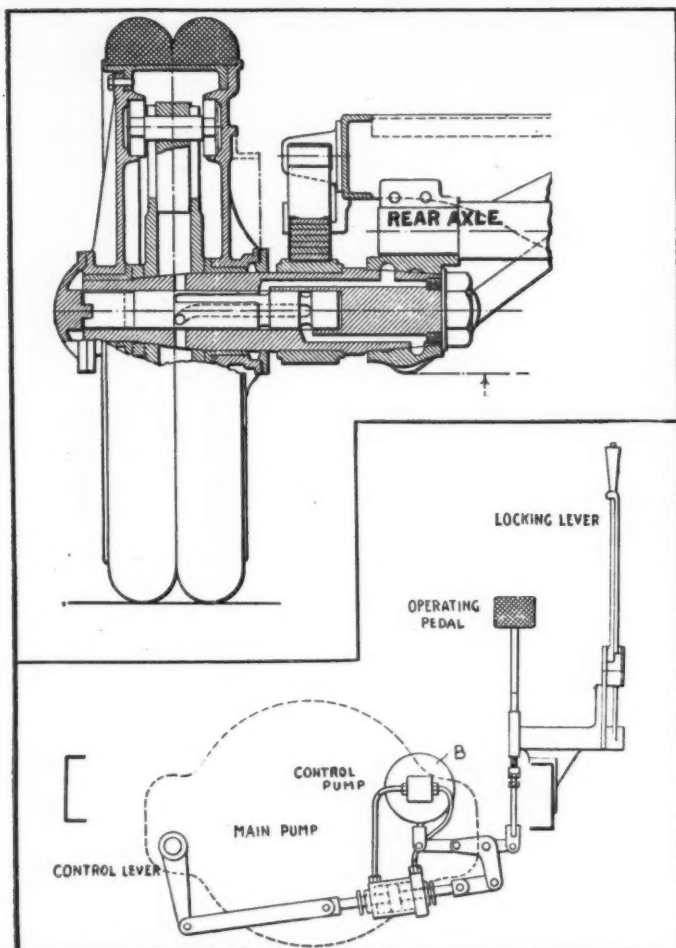
Fig. 4 and 5—Side and top views of truck chassis equipped with Hele-Shaw hydraulic drive

to cause an inrush from the pressure channel into the cylinder, with the result referred to. To remedy this evil, the bridge of metal separating the two ports is increased in thickness, so as to raise the pressure in the incoming cylinder while it passes the bridge and before it is put in communication with the discharge conduit, and to limit the pressure so created a small auxiliary port is formed in the extended portion of the bridge and this port is provided with a relief valve, and in addition a small hole is bored from the auxiliary to the main port admitting of a gradual equalizing of pressures.

These difficulties, though overcome in this instance, as it seems, illustrate the intricacies incidental to hydraulic transmissions, and they seem to have something to do with the choice of cylinders of increased length rather than increased diameter at the driven end of the Hele-Shaw mechanism—a choice which in turn may have dictated the use of the rear vehicle wheels as casings for the hydraulic motors at this point despite the mechanical and commercial complications which such a use of vehicle wheels necessarily involves. In this respect and also with regard to the strength and durability of the tubular connections from the pump to the fluid channels in the rear axle of the vehicle, the construction seems to be still in the experimental stage, viewed as part and parcel of motor truck construction.

Figs. 4 and 5 show the main features of the fluid conducts leading to the rear from the channels P and Q of the pump. The fluid is first taken in two pipes to a universal pipe joint F, which is rigidly suspended from the chassis, and in this joint suitable ports are provided for connecting the oil circuit from the pump to two pairs of pipes, each pair comprising a pressure and a suction channel and leading to a driven motor in one of the driving wheels by way of two bores in each end portion of the rear axle, which is of special design, as shown in Fig. 6. The two pairs of pipes also serve as torsion rods and the oil flow distributes itself automatically between the two pairs according to the driving resistance at the two wheel rims, so that the arrangement takes the place of the differential gear in gear-driven motor vehicles.

The motors in the rear wheels are similar to the pump, operating on the same general principle. But the guide ring has a fixed eccentricity, and is formed in the wheel sides, making the piston stroke and the gear reduction at this end a constant factor, and the cylinders are relatively long, having a larger capacity than those in the pump, thereby giving a gear reduction corresponding to that obtained by driving a large bevel gear crown from a small bevel gear pinion. While in the pump the rotation of the cylinder body drives the oil, the oil flow drives the cylinder body in the rear wheels. The valve shaft which corresponds to the fixed shaft in the pump is inserted in the bored-out axle and is ro-



Figs. 6 and 7—One of the driving wheels and part of the rear axle with hydraulic motor built into the wheel—Below, rear view of control mechanism for Hele-Shaw hydraulic transmission for trucks

tated from the hub cap of the wheel, receiving the oil from the conduits farther back in the rear axle by means of two ports extending around the circumference of the valve shaft, one connecting with the pressure conduit in this shaft and the other with the suction conduit. The cylinder body is fixed upon the axle, and the wheel, or motor casing, revolves upon gun metal bearings upon the axle, being rotated by the alternating pressure and suction on the pistons produced by the rotating valve shaft.

The method by which leakage of the fluid and the lubrication of the working parts is taken care of is more practically interesting. In the case of the wheel motor the casing constituting the wheel body is oiltight, and oil leaking from the interior of the cylinders past the pistons is drawn from the circumference of the casing by means of a pipe projecting radially from the cylinder body and connected by a circumferential groove on the axle with an auxiliary passage in the latter whence it is piped to the universal joint F, Figs. 4 and 5. From this joint, it is stated, a pipe is taken to an auxiliary pump, A in Fig. 5, which is driven from the camshaft of the gasoline motor and drives the oil back to the main oil system through the relief valves R. This motor also takes care of the leakage from the pump. In both cases a closed oil tank, shown in Fig. 5, is the intermediate link. It receives the drainage from the pump casing, after it has served to lubricate the guide ring, and the auxiliary pump creates a pressure in the tank, driving the surplus oil contained in it at any given time back to the main pressure and suction conduits through pipes fitted with non-return valves. The description is not explicit upon the details, as applied to the motor truck construction.

In connection with the speed control a second auxiliary pump is used, as indicated at B in Fig. 7. The necessity for using a pump to operate the adjustment of the sliding frame in the main pump seems to arise from the fact that such adjustment, when

going from low to high speed, meets with considerable resistance, since it involves the turning of the cylinder body to some extent and consequently the creation of pressure and suction in the cylinders. On the other hand, this peculiarity seems to be utilized in the little control pump, as no other means are indicated for operating it than pressure of the foot on the control pedal. It is stated that "the pedal is connected with the floating ring of this auxiliary pump by a system of levers, so that by raising or depressing the pedal the flow of oil can be regulated as desired," and all the flow required is a sufficient displacement of the oil to drive the double-acting plunger, shown in Fig. 7, to one side or the other, this movement actuating the control lever of the main pump. When the plunger has traveled to the position giving the desired adjustment, the floating ring of the auxiliary pump is replaced in its neutral position and remains in that position until a further operation of the pedal occurs, and this automatic action is said to be effected by the "overtaking gear" indicated in Fig. 7. Probably the action is one locking the oil in the plunger cylinder, and in the two small pipes leading to it by separating it from that in the auxiliary pump, supplemented by passing the latter and by a spring action returning the pedal to its neutral position.

The locking lever is ingeniously arranged to operate a cam which maintains the pedal in its neutral position when the car is at rest and which also controls the amount of movement which can be given to the pedal in either direction.

Efficiency tests with this hydraulic transmission have naturally shown that the losses in its operation are much greater at half and quarter stroke adjustment than when full stroke is used. Working pressures of 1,000 pounds per square inch and higher are used with it. In connection with an experimental motor vehicle with a 15-horsepower engine a transmission efficiency of up to 75 per cent. is recorded and this is said to have been bettered in another vehicle equipped with a 30-horsepower engine. —From illustrated description in *Engineering*, June 21.

**GERMAN Automobile Finance**—According to the latest public accounting giving the commercial status of Benz & Company, of Mannheim, Germany, which firm is said to possess now the largest automobile works in Europe, the business year ending April 30, 1912, has been one of increasing prosperity. After writing off about \$500,000 for the regular sinking fund and about \$300,000 to special sinking fund or depreciation, \$20,000 to workmen's aid society and carrying forward to next year's account \$250,000 (as against \$45,000 under this item at the beginning of the year) a dividend of \$300,000, or 10 per cent. on the capital stock, was declared, subject to the approval of the stockholders at the annual meeting. The receipts from the sale of goods during the year are given as \$3,000,000 and the combined cost of production and sale as about \$1,400,000, the net profits being consequently \$1,600,000. These figures practically double those of the previous year, though with a slight proportionate increase in the cost of handling the business. The cost of production for the year 1910-1911 was given as \$250,000 and the cost of the business department as \$425,000. The tool and machine tool account has been charged with \$167,000 for new purchases during the past year, which is the same amount as for the previous year, and after writing off for depreciation the sum of \$140,000 on this account it remains charged in the books with more than \$250,000. After the taking over of the Gaggenay motor truck works, the liabilities of the concern reach about \$5,000,000, while the assets include \$3,500,000 on bills receivable, \$585,000 on note account, \$2,350,000 estimated value of finished and half-finished goods on hand, \$1,480,000 in raw material, \$620,000 in goods on consignment; in all about \$8,550,000 assets, counting furniture and cash on hand. The business of the concern comprises the making of pleasure cars at its old and new factories, of motor trucks at the Gaggenay works and the building of Diesel ship motors under Hesselmann patents. In addition the building of aviation motors has been resumed.—From *Automobil-Welt*, August 11.



## Detroit S. A. E. Meets

### Besides Routine Business, Two Papers Were Read, One Treating of a Special Type of Lamp and the Other of Pressed Steel Bodies

**D**ETROIT, MICH., Sept. 14—The Detroit section of the Society of Automobile Engineers held its monthly meeting recently at which two papers were presented, one by Mr. Parkinson, of the Esterline company, on Golden Glow Lamps, the other by Mr. Millington, Western representative of the E. G. Budd Manufacturing Company, on pressed steel bodies, in addition to the ordinary routine business.

Mr. Parkinson stated that this new lamp, although of inestimable value, would not create a new era in the lamp industry, nor would it put any lamp companies out of business. There has been a big demand for an artificial light that would contain an element of sunlight and that would appear almost as a natural light.

The Glow Worm lamp gives this much desired result by using a reflection of special design and composition. The material used is a plate glass, the formula of which is a secret possessed by the glass company which makes the reflectors. The composition is such that the reflected light has the same spectrum as sunlight.

The design of the reflection is in general a parabola. This may be varied to suit a number of conditions. The thickness of the reflection is practically the same all over. The surfaces are highly polished and the back is silvered. The peculiar property of light given out by a Golden Glow lamp is that of fog penetration. By actual experiment a 16-candlepower Golden Glow light can be seen 2,300 feet through a fog where a 2,000-candlepower arc light was invisible at 200 to 300 feet only.

When used on automobiles, the usual glare of the headlights is not found. Holes and bumps appear in the natural state and even colors can be very distinctly seen. Mr. Parkinson stated that the Detroit United Railways has ordered Golden Glow lamps for all new cars and all replacements. These lamps are not now on the market to the automobile trade but will be by fall.

The paper was then open for discussion by members of the society.

Mr. Hinkley: Can you see 2,300 feet by this light?

Mr. Parkinson: It cannot be used as a searchlight. It may be seen very readily at 2,300 feet but will not illuminate an object at that distance.

Mr. Cox: How far will it illuminate by actual experiment?

Mr. Parkinson: We have not made any accurate experiments as yet. The Detroit United Railways found that a 16-candlepower lamp would show up the track for about 610 feet in a fog, where the ordinary lamps were of no avail. After a few more questions, Mr. Parkinson volunteered to supply the society with a set of lamps for experimental purposes, if the society would do the experimenting. His offer was accepted.

The second paper of the evening was read by Mr. Millington. It ran as follows:

#### Buyers Are Discriminating

**T**he automobile buying public is now very discriminating and demands style, comfort and luxurious equipment and at the same time popular prices. These conditions force the car builder to look around for a body that has the desired qualities and at a cost to him that will be allowable. The old style of heavy wood frame construction and wooden panels is practically obsolete; the panels are hard to obtain and the time allowed for finishing is too short to permit of turning out a job that will stand up. The wooden frame construction with metal panels is now

fairly popular and certainly has many good points, but a new body era is awakening, the era of the all-steel, rivetless and jointless body. This type of body is made with a great degree of accuracy. All parts are die-made and jig-assembled. Panels are made in one piece and gas-welded together. The whole is then spot-welded to the pressed-steel frame. All doors are die-made, jig-assembled and are consequently absolutely interchangeable. They are even painted before being placed on the bodies.

The cost of an all-steel body constructed along the above pattern is high unless made in very large quantities. The several distinct advantages claimed for this style of body may be summed up as follows:

1—Greater strength for the same weight, being a jointless, rivetless, and solderless unit.

2—It is more flexible.

3—It holds the joint much better than any other type as the paint is baked on; three or four coats exclusive of the varnish coats thus applied will give as good a finish as the usual fifteen coats, varnish coats or finishing coats excepted.

4—It can be produced cheaper than the other types, provided sufficient quantities are ordered.

5—It is impervious to atmosphere changes.

6—It is absolutely silent and will not rumble nor squeak.

## British Fear American Invasion

**A**UTOMOBILE invasion of Great Britain and more particularly of Great Britain's colonies by the American industry, is seriously on the nerves of the British press and public and repeated calls are being made on the commercial organizations of Great Britain to stem the tide toward American automobiles by building cars that will be able to compete with the imported machines on a basis of price as well as service and quality.

It was recently stated by Lord Montagu that the American factories having enormous outputs and being operated with economy on the basis of quantity production would redouble their efforts to submerge the British market in 1913.

When the low-priced American automobile was put on the English market for the first time the general public was very skeptical as to the quality of its material and workmanship, but now this prejudice has entirely worn away and the American car sells on its merits.

In the low-price class the American cars are almost as popular in England as they are at home and it is admitted by numerous correspondents of the *London Express* that the situation is serious from the British point of view.

The main question that rises before the eyes of Great Britain is this: "If the American manufacturer can market a car in England for \$750 why can not we do the same?"

Under the tariff as it is at present, wages are higher to the skilled mechanics who are employed by the American factories and the same rule applies to the commoner varieties of labor. Materials are mostly domestic in the low-priced American cars.

With these things ranged against the American manufacturer in the British market, as far as the selling price in competition is concerned, the American cars find a ready outlet.

According to the correspondents of the *Express* the main reason for this condition is that the American is giving best value, which of course means that on an even basis of price the American cars are better and on even basis of quality the American cars are cheaper.

Some of the correspondents deny that the \$750 car would never have made its appearance at all save for the enterprise of the American manufacturers and set up the plea that if Great Britain had a tariff, somewhat similar to the one at present protecting the American industry, the British manufacturer and workman would have a chance in their domestic market and would dump their surplus abroad, even as their Yankee cousins are doing at present.

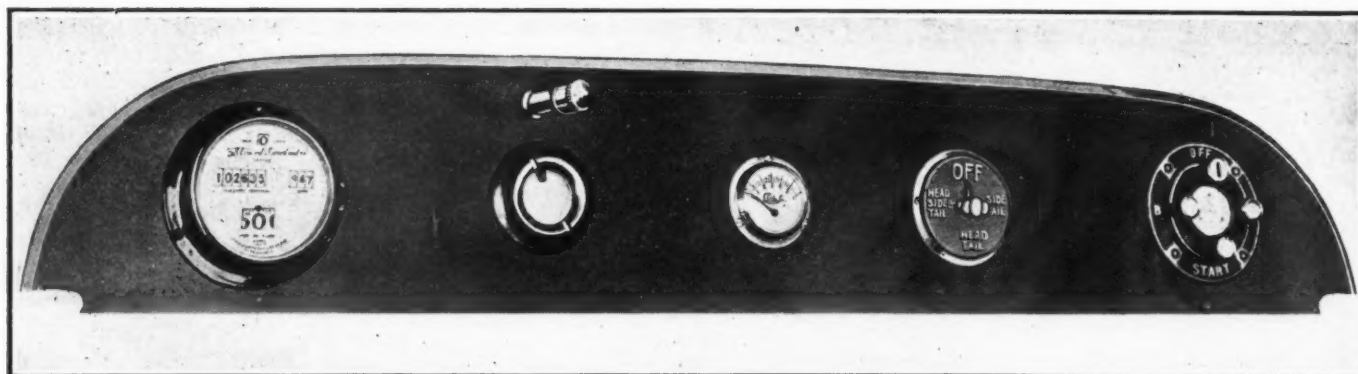


Fig. 1—Cowl board carrying dash equipment which is a feature of the Cole series eight

## New Cole Series Has Electric Starter

Three Chassis on the Market for the 1913 Season—Pressure Feed Gasoline Tank Adopted in Place of Gravity—Other Changes of a Minor Nature Made  
—Cowl Board Adopted for Mounting of Dash Fixtures

**S**ERIES eight of Cole cars will be equipped with the Delco starting and lighting system. This announcement brings to light another firm which has pinned its faith to the electric starting and lighting equipment. It is also the principal change in the Cole line of cars for the coming season barring a few minor refinements which were made merely for the sake of appearance in all but one case where the gasoline feed has been changed from gravity to pressure.

There are three models on the market. They are known as the 40, 50 and 60. The first two are four cylinders, while the 60 is a six-cylinder car. All models have the cylinders cast in pairs and have motors with the same general features of construction, although the bores and strokes vary considerably.

The cylinder dimensions of the three models for 1913 follow:

Model	40	50	60
Bore	4 1-8 inches	4 1-2 inches	4 1-8 inches
Stroke	4 3-4 inches	5 1-4 inches	4 3-4 inches

The power plant as a whole is of the unit type suspended at three points. The cylinders are of the L-head type with integral water-jackets of large size which are specially designed to permit of an easy flow of the cooling water about the cylinder walls. The motor is set on a slight inclination to the horizontal plane in order to secure a straight line drive to the rear axle when the car is traveling under its designed load. This angle approximates 2 1-2 degrees.

The pistons are soft gray iron castings. They are fitted with

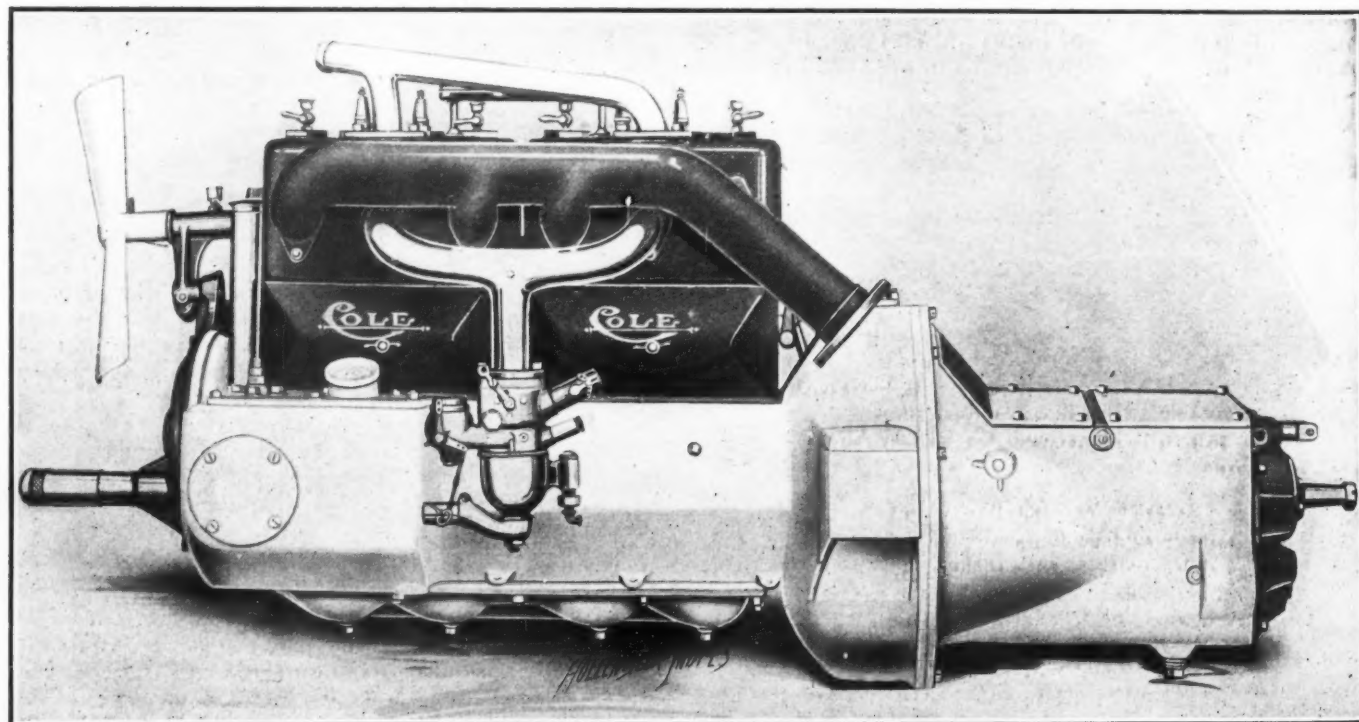


Fig. 2—Left side of Cole model 40; note oil reservoir on side of crankcase and the entirely inclosed valve action



three 1-4-inch rings, all located above the wristpin. There are two oil grooves in the piston, one below the lowest piston ring and the other at the lowest extremity of the piston. The purpose of these rings is to distribute the oil evenly over the surface of the cylinder and in case of the upper one to bring oil up to the wristpin bearing bushing for the purpose of lubricating the oscillating bearing at this point.

The connecting-rods are of I-beam section and are made with extra long bearing surface. The lower bearing is grooved to distribute the oil about this important bearing. The two ducts or grooves pass each other in X form. Besides the grooves there is an oil hole through the bushing by means of which the oil is permitted to enter the bushing and become distributed about the bearing. The lower connecting-rod bearing is bushed with babbitt and the bearing cap is held in place by two large bolts which are castellated to prevent them from working loose and wearing excessively on account of lost motion in the bearing. The connecting-rod is fitted with a scoop on the bottom which is a factor in the oiling system of the car and which will be touched upon later.

The crankshaft is a solid chrome nickel steel drop forging having three bearings in the four-cylinder models and four in the six-cylinder models. The bearings are carried on bridges located in the upper half of the crankcase casting and are situated between each pair of cylinders. In order that it will not be possible for the oil to work along the crankshaft and through the crankcase at the end bearing there is a special device fitted on the end of the crankshaft. This consists of a ring which will catch the oil as it flows along the crankshaft. When the oil reaches the outer diameter of this ring it will be thrown off by the added centrifugal force due to the fact that the diameter of the ring is much greater than that of the crankshaft. The oil so thrown off is caught in a duct in the bearing bushing and thus finds its way to the crankcase. In order that the oil which works its way to the periphery of the ring will be more certainly thrown off, the outside of the ring tapers to a sharp edge around its circumference. No oil will be splashed against the crankshaft beyond the ring as it is placed just at the point where the crankshaft leaves the crankcase. At the rear end of the crankshaft there is a flange which is forged integrally. Its purpose is to sustain the flywheel and it is pierced by six equally

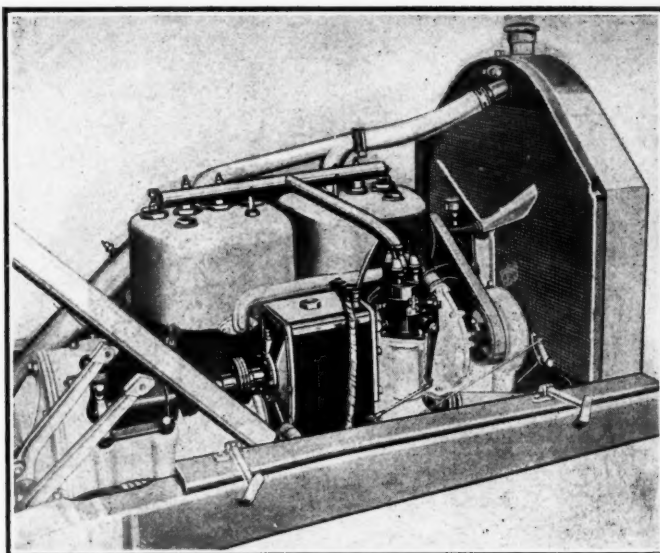


Fig. 4—Mounting of the Delco system on Cole motor

spaced holes which take the bolts for attaching the flywheel to the end of the crankshaft.

The Cole cooling system has been carefully thought out. The water is circulated by means of an ingeniously mounted water pump located on the right side of the motor, which incidentally is the side opposite the valves. The water-pump casing is firmly bracketed to the crankcase near the forward end of the motor. An extra gear at the extreme right of the timing set drives the shaft for the water pump as well as the fan pulley and the magneto. The pump is separate from the magneto, however, so that if it is desired to remove either it is a mere matter of loosening an Oldham coupling on the shaft. The water inlet is at the lower side of the pump permitting a direct connection with the radiator by passing the pipe under the slight projection in the gearcase formed by the housing for the gear that drives the pump and magneto shaft. The water is discharged at the top at a point very close to the water-jacketing of the

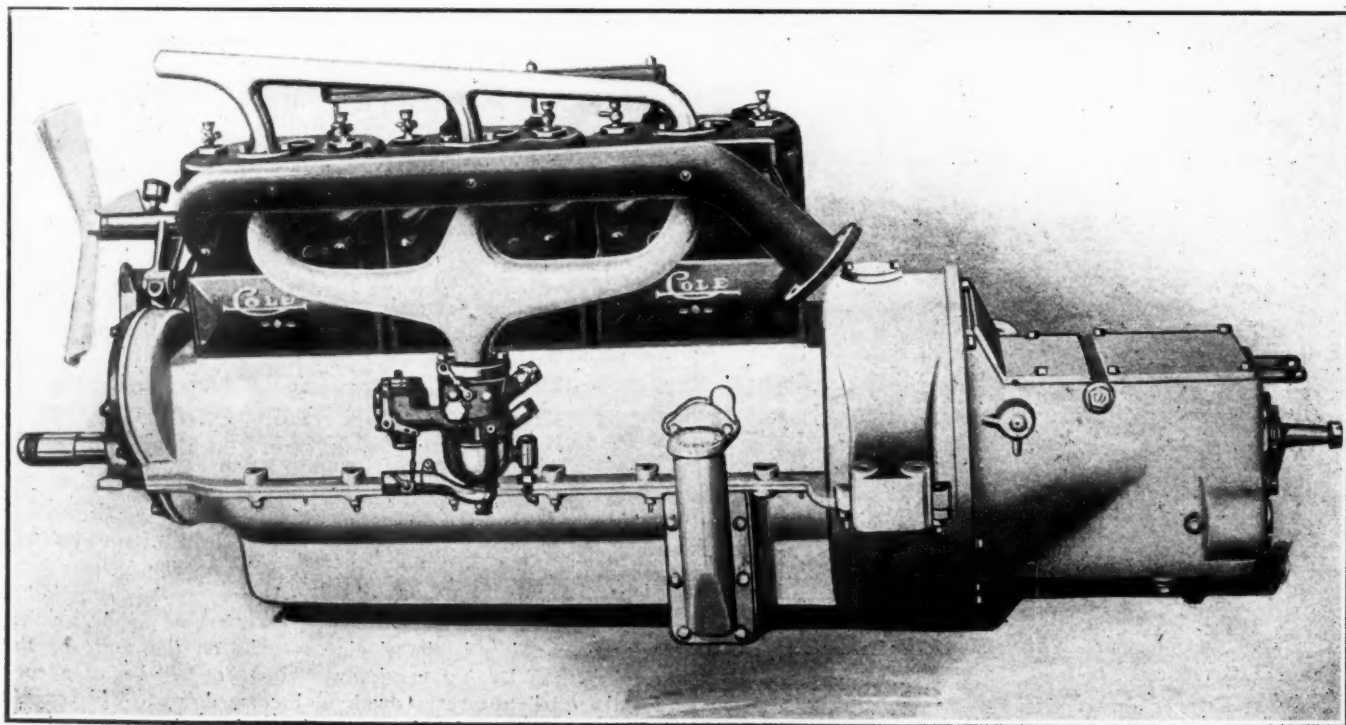


Fig. 3—Left side of the six-cylinder Cole motor, showing unit construction and the mounting of the new Schebler carbureter

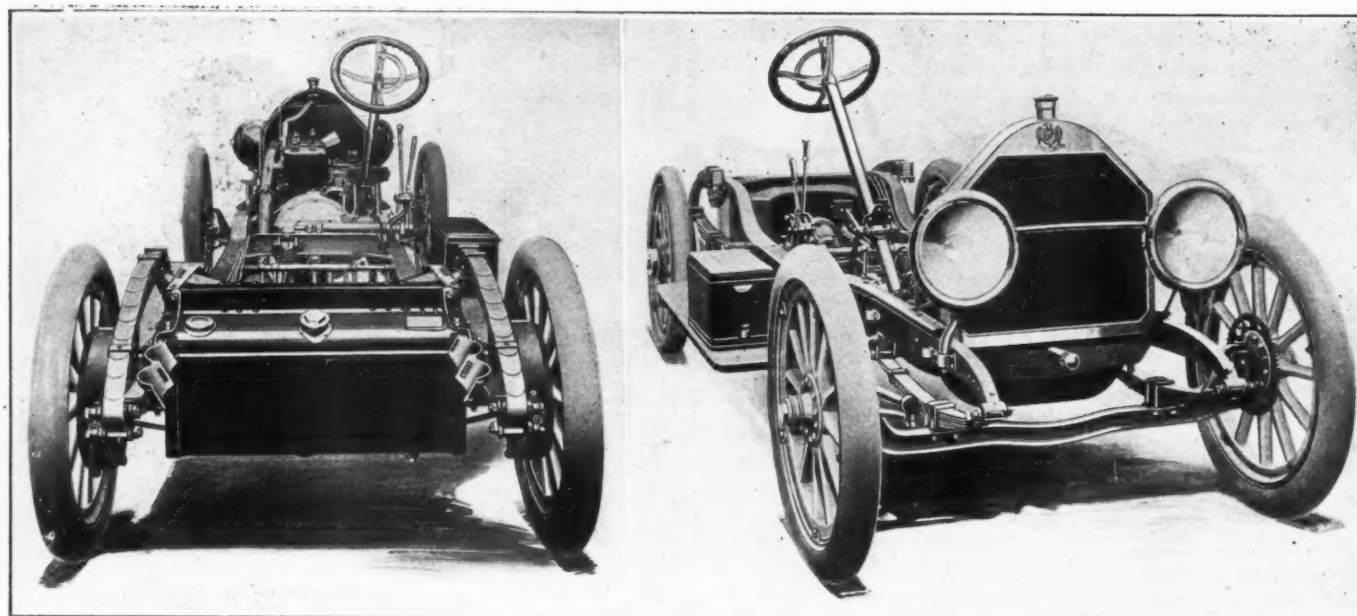


Fig. 5—Rear and front view of the standard series eight Cole chassis with pressure tank

cylinders. The water returns to the radiator through a very straight manifold located on the top of the cylinders outside the valves. The position of this manifold is such that the water must pass around the valves before it can enter the manifold. The radiator is a Mayo honeycomb.

One of the distinctive features of Cole design is the fan. The fan has three blades. It is a solid aluminum casting. It is mounted upon a bracket arm which can be turned about its bottom support, thus putting more or less tension on the fan belt according to the requirements. Should the belt become stretched through long use, the stretch can be compensated for by turning the bracket arm slightly and then tightening the nut at the bottom which holds it in place. The fan bearing is a plain bearing of extra length and is lubricated by a grease cup mounted upon it.

Silence has been made an aim throughout the motor. The timing gears have been given special attention in this direction, as have also the valve springs and push-rods, which are inclosed by heavy plates. The gear wheels have six spokes which tend to break up the noises due to vibration. They have helical teeth which are carefully ribbed to secure silent engagement, and

the gears are pinned and keyed carefully to their respective shafts in order that there will be no rattle due to loosely connected gears.

The lubricating system employed on the Cole cars is the constant level splash system. In this system the oil is carried in the reservoir in the crankcase. The oil capacities of the different models are as follows: Model 40, 2 1-2 gallons; model 50, 1 1-2 gallons; model 60, 2 gallons. The reservoir is located on the left side of the crankcase in the model 40, and as may be seen in Fig. 2 it can be detected by the box-like projection on the side of the crankcase. The larger four-cylinder model carries the oil in a special compartment located in the bottom of the crankcase, but the method of lubricating the motor is exactly the same in all models.

The oil pump, which is driven by a worm gear from the camshaft, is of the plunger type and is contained directly within the oil reservoir so that on account of the copious lubrication which it receives the wear is practically nil. The reduction between the camshaft and the oil pump is 25 to 1, and as the camshaft is running at but one-half the speed of the crankshaft the reduction to the oil pump is 50 to 1 with the crankshaft taken as a basis. There is an adjustable nut by means of which the stroke of the pump and hence the amount of oil delivered at each stroke may be governed.

The oil pump takes the oil from the reservoir and forces it to a sight feed located on the dash. In this way the operator sees every drop of oil that enters the crankcase and he knows when the supply is running short by the behavior of the sight feed. The oil is sucked into the pump from the bottom on the up stroke and then on the down stroke is forced up into the lead which takes it to the sight feed. After passing through the sight feed the oil is led to the crankcase where it enters a series of troughs which are located one below each connecting rod. On the bottom of the connecting-rod there is a scoop that catches the oil and throws it up into the cylinders, where it is picked up by the oil wiper rings on the piston and distributed about the cylinder walls. The troughs into which the connecting rods dip are curved so that there will be no danger of all the oil leaving one of the troughs should the car be ascending a steep hill. Another feature which takes care of the lubricating system on a hill is the sloping troughs on the walls of the crankcase. When the car is on a hill there will be a tendency for the oil in the rear trough to become deeper. This excess oil will be thrown by the connecting-rods against the walls of the crankcase from where it will drain into a series of sloping

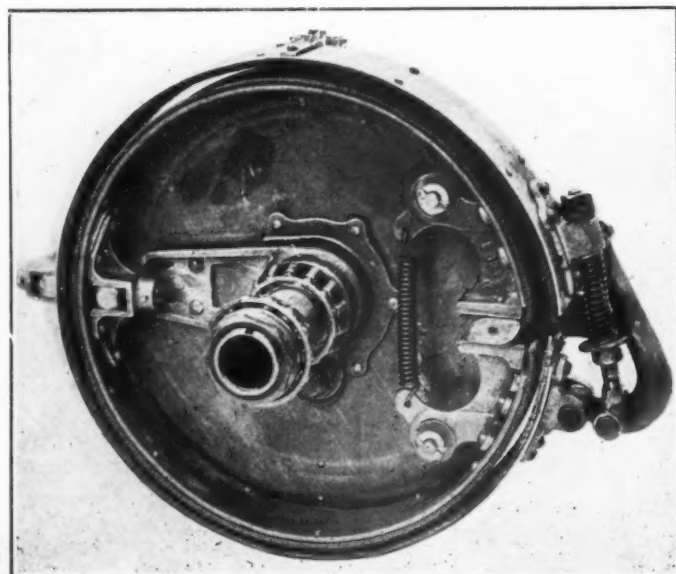


Fig. 6—Interior of the Cole internal and external brakes



troughs which lead the oil back to the front end of the crankcase. The slopes of these troughs are so great that in spite of the gradient there will always be a gravity flow of the oil back to the forward end of the crankcase. These sloping troughs keep the oil in circulation even on a level road. There is no return of the oil to the reservoir, the pump feeding fresh oil continuously as it is used up by the motor.

The entire electrical apparatus is taken care of by the Delco equipment. In the series 7 a separate dynamo was provided for the lighting current; this has been entirely supplanted by the new system which not only takes care of the lighting of the cars, but the starting and ignition. In applying the Delco system to the Cole Northway unit power plant it was only necessary to cut teeth in the periphery of the flywheel to take the reduction gearing on the electric starting motor. No complications were found in doing this work and there had to be no changes in the motor design to make the installation. In placing the Delco system in their cars the Cole company took the opportunity of mounting all their dash equipment in a very unique and ingenious manner. Across the top of the deep cowl, the board which is shown in Fig. 1 was mounted. This board is of highly polished walnut and carries the ignition and lighting switches, the oil sight feed, gasoline tank pressure gauge and speedometer. A cowl light which illuminates the board is also mounted here and is connected in series with the tail light, thus acting to some degree as a telltale besides making the dash fixtures visible.

The Delco system consists of two principal units, a motor-generator and a storage battery. These are so arranged that the generator part of the motor-generator keeps the battery charged when the motor is running and the battery in its turn supplies the current for the motor when the motor-generator takes that rôle for the purpose of starting the motor.

The motor-generator is geared to the flywheel through a train of reduction gears. It is mounted on the side of the crankcase. When the ignition switch is put in the starting position the storage battery furnishes a current of 24 volts which turns and starts the motor-generator, thus turning over the engine by means of the flywheel. When the motor picks up and starts to go under its own power the gearing of the starter is automatically disconnected from the flywheel and thrown into engagement with magneto shaft by means of a ratchet clutch. When driven through this shaft the machine becomes a shunt-wound generator and starts to recharge the storage battery giving it sufficient current to take care of the ignition and lighting. The storage battery starts to be charged at 300 revolutions per minute. From this point up to about 1,000 revolutions per minute the current increases to 12 or 14 amperes. At higher revolutions than this the current does not materially increase. The lamps used with the system have a voltage of 6 1-2; the 6-volt lamps which have been used with the system have exceptional brilliancy but a short life.

The carbureter to be used on the series eight Cole cars is the new Schebler model O. This is a double-jet design with one of the jets concentric and the other located in such a position that it

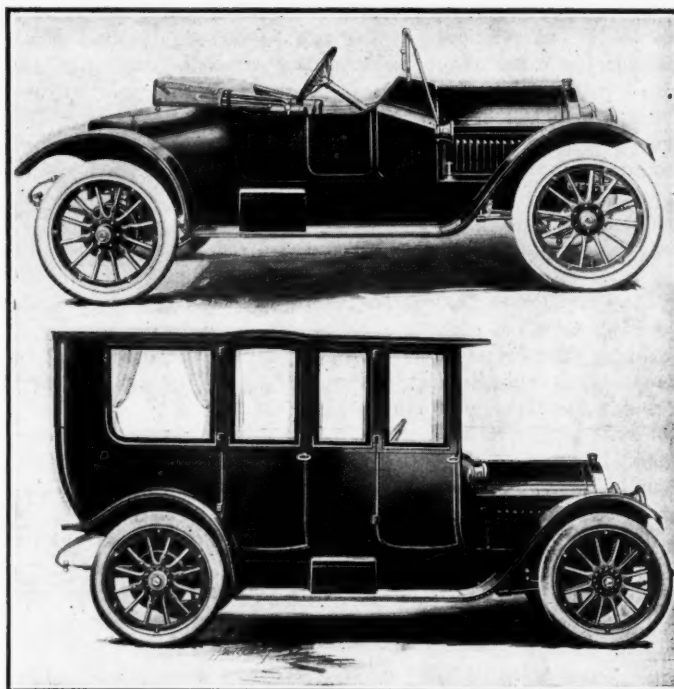


Fig. 8—Model 40 roadster and 50 limousine, series eight

comes into action with the auxiliary air. A feature in connection with this carbureter is the control of the air from the steering post. The gasoline pressure tank on the model 40 has a capacity of 18 gallons and on models 50 and 60 20 gallons. The tank is located in the rear just below the after cross-member of the chassis frame.

The clutch is of the leather-faced cone type. The engaging stress has been distributed among six smaller springs instead of the former single spring. The object of this to secure an easier engagement than would be possible with the single spring. The springs are distributed equally about the clutch so that an equal engagement is assured. The clutch spider is of aluminum and is of very light construction throughout, not being a solid piece but having ribs which make up in strength what is lost in weight. The clutch spring has a large diameter for its strength, thus securing a maximum flexibility. It is placed on the outside of the clutch hub and is very accessible. The adjustment of the clutch spring is made by turning three nuts which compress the spring, thus increasing the strength of engagement. There is an opening provided in the clutch housing for making the adjustment just mentioned as well as for reaching the grease cups on the clutch yoke which can be turned down or filled through this opening. The disengaging yoke is a solid piece bearing against a flat collar or flange on the clutch shaft just behind the large clutch spring. The yoke is circular in form and of such shape that it bears practically against the whole col-

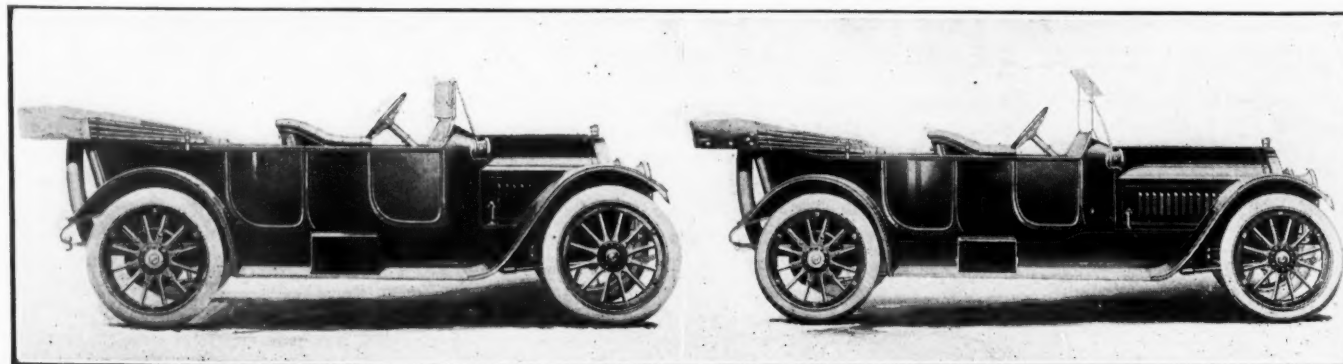


Fig. 7—Cole model 50 with 122-inch wheelbase; 132-inch wheelbase model 60 touring car

lar on the back end of the clutch. The yoke is bolted up in very much the same manner as the two halves of a main bearing and carries a liberal supply of oil in a self-contained well which lubricates the bearing surfaces at the point where the yoke presses against the collar when the clutch pedal is depressed for changing gears or in coasting. The clutch shaft which takes the drive has four splines permitting of a free axial movement, but with a good torque absorption. On the rear end of this shaft is the gearset drive pinion.

The gearset is of the three-speed and reverse type controlled by a lever through an H quadrant. The gearset housing is attached directly to the rear of the motor crankcase giving the unit construction which may be noted in Fig. 3. The housing is of the barrel type, having no joints except the rear removable cover plate which is protected by an oil-tight gasket to prevent the leakage of the transmission lubricant. The shafts of the gearset are all carried on heavy-duty annular ball bearings. Four-spline shafts are used permitting the gears to slide longitudinally, but to be relatively fixed to the axle. The material used in the gears and shafts is chrome nickel steel.

The drive is taken up by a chrome nickel-steel propeller shaft which has a universal joint at either end. This shaft delivers the power to a Timken floating rear axle mounted throughout on Timken roller bearings. The housing of the axle is of pressed steel, and is continuous throughout the whole axle width with the exception of the differential cover plate, which is removable for inspection purposes. The housing has been reinforced at the ends, where it becomes tubular in form by a 3 1-2 per cent. nickel-steel tube. The reinforcement extends from the ends toward the center of housing past the spring pads. It is welded to the main housing. The drive shafts are of chrome nickel steel, machine finished. They have squared ends, as is usual in the floating type of axle, and are capable of being removed by merely taking off the hub caps and drawing them out.

#### Rear Axle Bearings Adjustable

Bearings are adjustable in this axle. It is possible to see through a peep hole in the differential casing if the gears are properly in mesh, and if not, the proper adjustments to compensate for wear can be made by external adjusting means which can be reached by removing the plate covering the differential. The torque members are of triangular-sectioned tubing. There are two of these arms connected to the top and bottom of the differential housing in sockets connected to a hardened pin which takes all the thrust. The pin fits into ground bushings and is lubricated by means of an accessible grease cup.

There are two sets of brakes acting on the same drum, one set being of the external contracting type, while the other is of the internal expanding type. The brake dimensions of the four models are as follows:

Model	40	50	60
Diameter . . . . .	14 inches	15 1-2 inches	15 1-2 inches
Width . . . . .	2 inches	2 1-2 inches	2 1-2 inches

The lining on the brake is of asbestos fabric interwoven with copper wire to give a high frictional coefficient without burning.

The front axle is of I-beam construction. It is of Timken manufacture with nickel-steel steering knuckles with roller-bearing mountings. A speedometer mounting is provided on the steering arm by a hole drilled through a special box. Careful fitting is made a point in the construction of the steering knuckles and spindles. The grinding work in these parts has limits of tolerance of one thousandth of an inch and less.

The wheels are all of second-growth hickory. They are made on the artillery plan and fitted with Firestone demountable rims. The size of the tires adapted to each model is as follows:

Model	40	50	60
Tire Size . . . . .	36x4 inch	36x4 inch	37x4 1-2 inch
Firestone or Goodrich tires are furnished as regular equipment.			

The spring suspension is half elliptic front and three-quarter elliptic rear. The spring dimensions are the same on all three

## Harking Back a Decade

### What the Motoring Publications of 10 Years Ago Had to Say on Live Matters of the Day

FROM *The Automobile and Motor Review*, September 13, 1902: Jacob Ruppert, the New York brewer, has installed a 7-ton electric truck made by the Fischer Motor Vehicle Company for use in the delivery department. The current is generated by a four-cylinder, four-cycle gasoline motor, the cylinders of which measure 5 1-2 by 6 inches.

The Hon. Charles Stuart Rolls is coming to the front as a leading race driver in England. Montague Grahame-White is likewise becoming very prominent in the speed world on account of his brilliant skill and fearlessness.

In the early days of automobile construction, in this country at least, the problem of compensating for road inequalities as affecting the means of transmission, was generally accomplished by adopting the principle of the three-point support in the running gear and carrying the machinery on a rigid framework. This has been proved to be unsatisfactory and the next step was to lighten the reaches and strengthen the springs that carry the body. It has come to be accepted practice at present to recognize that flexibility and not rigidity is the proper condition for both frame and transmission mechanism.

John Farson, Jr., in his Winton touring car, won the two 5-mile dash races staged at the Rockford, Ill., county fair. The track is an oval 1-3 mile in circumference with turns unbanked. The best time made was 11:57 1-5.

The Fournier-Searchmont Automobile Company, of Philadelphia, will be moved to a new factory location recently secured near Chester, Pa. The station is now known as Trainer but an effort is being made to have the postal authorities rename it Searchmont. The company expects to move in October.

The name of the Robinson Motor Vehicle Company, of Hyde Park, Mass., has been changed to Pope-Robinson Company. The capital stock has been increased from \$100,000 to double that amount. Edward W. Pope has been elected secretary and treasurer.

The Austin Automobile Company has been incorporated under the laws of Michigan to manufacture gasoline automobiles at Grand Rapids. The car will be of the French type, 16-horsepower with detachable tonneau.

Gasoline has advanced in price in New York City from 18 to 20 cents a gallon and 15 cents a gallon by the barrel. There is a scarcity of the 76-degree gasoline.

models, the front being 2 inches wide by 40 inches long, and the rear 2 inches by 51 inches. The steering gear is the Gemmer type with 18-inch steering wheel. The control levers are of solid German silver. Special attention has been given to body design this year. A drop of two inches has been given the frame just behind the dash, giving more sprawl room in the tonneau. The driver has a lower seat also which gives greater comfort. The fenders curve more abruptly around the wheels, giving a long, racy running board. The extra tire is now carried on the rear. The starting crank will be carried in the tool box where it will be handy in case of an emergency.

The equipment consists of an extra demountable rim, speedometer, grade-indicator, Delco starter, electric headlights, side, cowl and tail lights, silk mohair top with side curtains and top cover, clear rain vision wind shield; pump, jack and tool kit under front seat; robe rail and foot rail, rear tire carrier, electric horn, all dash equipment being mounted on the highly finished cowl board.



# New Acetylene Starter

## Niagara Compressor Mounted on Steering Column Controls Starting of Car and Gas Headlights

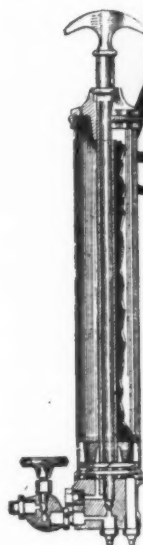


Fig. 1—Part section of compressor

**A**N ACETYLENE motor starter of very novel construction is the Niagara. The principle upon which it operates is the placing of acetylene and air in the cylinders of the motor thus forming an explosive mixture. The firing of this mixture is effected by the ignition system of the car. The principal feature of the starter is that the mixing of the air and acetylene is done within the motor cylinder and not outside. Another prominent feature is that the acetylene headlights on the car can be regulated by the driver from his seat.

In appearance the starter is a long cylindrical plunger pump a part section of which is shown in Fig. 1. It is attached to the steering post as indicated in the view of the installation, Fig. 2. It is thus within easy reach of the hand at all times. At the bottom of the cylindrical pump there are three copper tubes one of which passes to the acetylene tank and is the source of supply both for the starting apparatus and the lamps, another goes directly to the headlights and supplies them with pure acetylene gas, the third pipe is for the purpose of starting and takes the gas directly to the cylinders. When the plunger is lifted, a measured amount of acetylene is drawn into the barrel of the pump and the correct amount of air for making an explosive mixture with this gas is also taken in through the intake side of the pump. A downward thrust on the plunger sends this gas through the copper lead into the cylinders which it enters and becomes thoroughly mixed in the process so that it is readily combustible.

The connection of the starter lead with the cylinders is T-shaped except in the case of the foremost cylinder where it is an L. The connection to the acetylene tank consists of a regular tube which replaces the valve ordinarily found at this point. The valve control is located at the foot of the pump and it is from this point that the pressure of the feed is regulated. The headlights are thus under perfect control without the necessity of the driver having to leave his seat. The latter valve may be seen in Fig. 1 which shows a section through the lower part of the pump. The other valves are automatic and are of the steel ball type.

The passage of the acetylene gas for the lamps in the illustration is that located nearest to the pressure control valve; it passes out through the base of the pump directly into the copper lead for the headlights. The operation of the headlights by means of this valve does not in any way interfere with the action of the starting device which is altogether independent of the lamp control although contained within the same housing.

### Best of Materials Are Used

**T**he barrel of the compressor mounted against the steering column is of mandrel drawn steel tubing. The plunger is cast iron and is made exactly like the piston in a motor with two piston rings. The iron used in the casting is the same style of soft gray iron that is used in the pistons and cylinders of nearly all gasoline motors. This combination of soft gray iron with the two cast iron piston rings working against the steel tube should give an arrangement that will wear as long as the

car. Another feature of the construction of the pump which is also of interest is the cover plate over the top of the starter. This forms both the cover to the barrel and the upper bearing of the plunger stem. The bearing is an integral part of the cover which is made entirely of steel to guard against wear through excessive use. The length of the bearing provided for the stem at this point is 1 1-2 inches. Through the cover there is a small vent hole to prevent any compression in the upper part of the compress or barrel when the plunger is lifted up. This vent is small in order that no dust can possibly pass down into the barrel and score the same after it has collected in sufficient quantities to work down past the piston at the same time it is large enough to allow of the free reciprocating motion of the plunger. The vent hole will also act as an oil hole for the introduction of an occasional drop of oil to lubricate the action of the metal plunger and cylinder contact.

The handle of the pump is of such shape that it affords a good grip and is at the same time ornamental. It is connected directly to the hollow steel plunger stem which is screwed at its lowest extremity into the boss in the center of the piston or plunger making a firm connection to the latter so that it cannot possibly work loose.

The piston is of the inverted bucket type with the two rings located at the bottom. The piston seats firmly against the base of the pump around its entire circumference, it is grooved, however, above the air intake and the mixture outlet ports. The base contains the air intake which is governed by a ball check valve held in place by a spring. The lifting of the piston draws the air in through this valve and allows it to enter in the correct proportion to the amount of acetylene that is taken into the cylinder of the pump.

### Device Is Easily Installed

**T**he installation of the device does not offer any difficulties on any make of car as it consists in simply clamping the plunger to the steering column and then cutting holes in the footboard to allow the piping to pass to the cylinders and to the acetylene tank. These holes are approximately 1-2 inch in diameter and allow the tubing to pass through without difficulty. The third tube which conducts the mixture to the cylinders will be passed through the dash as it is required to bring the lead directly over the cylinder heads. In installing this part of the device the regular compression cups and release cocks in the cylinder heads are removed and the T connections screwed in the three rear cylinders and the L connection in the forward cylinder. The pipe is then connected to these as shown in Fig. 2 so that there is a straight flow from the dash directly through on a straight line to the end cylinder. The ignition apparatus does not have to be touched unless the car is only equipped with the high tension magneto. In the latter case a battery and coil set for starting purposes can be readily added. In most cases, however, the battery starting set will be found on the car and the matter of installation will not take longer than 2 hours.

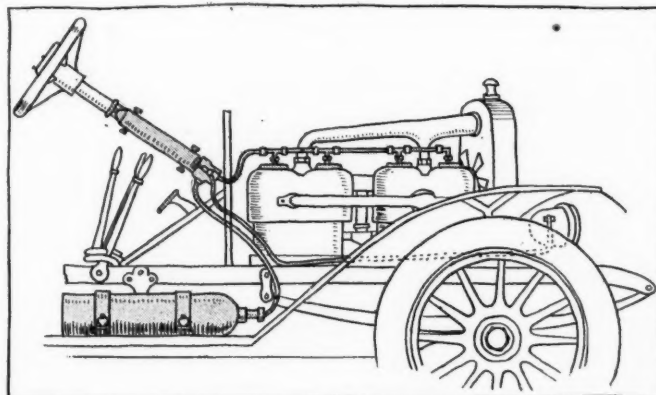


Fig. 2—A view of the installation of the Niagara starter on a four-cylinder motor

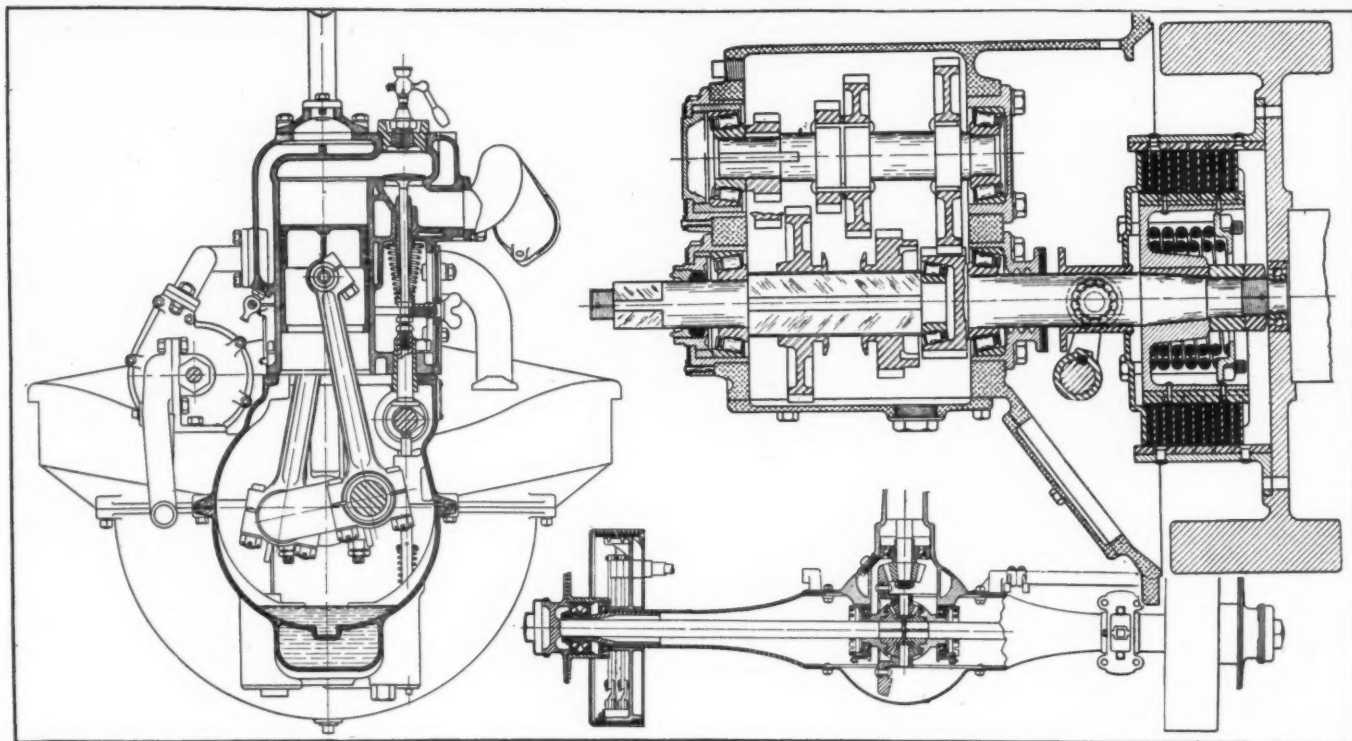


Fig. 1—Showing cross-sections through the new Glide motor, clutch, gearset and rear axle

## Glide 1913 Cars Ready

Entirely New Model on the Market for  
The Coming Season Built on Lines  
Similar to Former Model

Longer Wheelbase, Increased Bore, Longer Springs and  
Heavier Parts Some of the Improvements

**A**N entirely new model Glide car will be put upon the market for the season of 1913. This car, which is to be known as the 36-42 will be built along similar lines to its predecessor, the model 3, which was introduced last year. Aside from the fact that the new car will have a wheelbase of 118 inches, which is 4 inches longer than the model 36 had, and that the new car on account of its higher power and larger dimensions will be built more heavily in the parts subjected to additional strain, the new model is throughout a larger edition of the successful 36.

The motor in the new model is rated at from 38 to 42 horsepower on the actual brake test and is guaranteed by the makers to actually deliver this power. The bore of the motor is 4 1-8 inches and the stroke 5 1-4 inches. The four cylinders are a monobloc casting and have the intake manifold and the valve chambers cast integrally. In the process of construction each block is first bored roughly to center. The casting is then set aside and allowed to age so that any of the internal strains which would be apt to develop in a complicated casting of this nature would be sure to be detected. After this test has been consummated another test by water under high pressure is given to make the soundness of the casting absolutely certain. After this test the cylinders are finish bored and then ground to a mirror finish. The exterior parts of the cylinder castings are given two coats of air drying enamel providing them with a handsome and permanent finish.

The entire valve mechanism, including tappets, valves and springs, is entirely inclosed, keeping them free from dust and

moisture and eliminating tappet sounds entirely. The valves have nickel steel heads electrically welded to carbon steel stems providing against burning and warping of the head and wearing of the stems by tappet action. The valves have both seats and stems and are ground to exact size. By removing cast-iron cover plates, the valve springs and tappets are readily accessible for inspection or adjustment.

The pistons are made of the same soft gray iron as used in the cylinders. They are ground to size and each fitted with four diagonally-cut rings. The rings are made of special iron of great elasticity and toughness so as to retain their expansion at high temperatures and under continued use. They are ground on the outside and on both faces and are carefully fitted to the ring grooves in the pistons and to the inside bore of the cylinder. The pistons are also supplied with five oil grooves turned on the outer face and so spaced as to carry the oil to all parts of the cylinder. The piston pin holes are bored and then reamed in special machine tools, insuring alignment. The piston pins are made of seamless drawn steel, hardened and ground to size. The pin is clamped rigidly in the upper end of the connecting-rod and has its bearings in the piston-pin bosses. This provides for a large bearing area and also for lubrication of the pins.

The connecting-rods are of I-section drop forged from high carbon steel and heat treated to secure rigidity. The piston-pin eye and crankpin bearings are bored and reamed in perfect alignment and are tested on gauges for exact center distance. The bearing caps are held in place by means of 3 1-2 per cent. nickel bolts secured by castellated and pinned nuts. The bearings are of nickel babbitt, expanded into place, reamed and hand scraped. Sheet steel shims of from .003 to .008 are supplied for affording adjustment of the bearings to take up wear. The cam tappets are of hardened and ground chrome nickel steel and are easily removed for inspection. The crankshaft is of the three-bearing type and is forged from high carbon steel and is heat treated to secure the utmost rigidity and shock-resisting qualities. All bearing surfaces are ground accurately to size. These are of exceptionally liberal dimensions. The fly-wheel is secured to the crankshaft flange by six large bolts provided with castellated and pinned nuts. The crankshaft bearings are of nickel babbitt expanded into place, reamed and carefully hand scraped. They are supplied with thin sheet steel liners



like the connecting-rod bearings, making adjustment a quick and simple operation.

The crankcase and flywheel housing is cast of nickel aluminum alloy is made in two pieces, being split on the center of the crankshaft. The upper half carries all mainshaft bearings so that by dropping the lower part these are readily accessible for adjustment. The lower half contains the oil pan and oil reservoir. The flywheel is totally inclosed. The upper half of the crankcase incloses the camshaft and bearings. The lower half contains the oil reservoir pumps, float chambers and screen. The camshaft is a one-piece forging specially heat treated and hardened before being ground to exact size. It is supplied with three liberal nickel babbitt bearings and is readily removed from the motor by removing the gearcase cover.

The two oil pumps situated in the lower oil reservoir are of the plunger type and have their inlet openings below the level of the oil in the reservoir and they cannot become "starved" even when the car is on a grade of 45 degrees. This provides lubrication at all times. The oil is pumped through copper tubes to the timing gearcase and to the rear main bearing, from which points it overflows into the crankcase providing supply for a constant level splash system for the pistons, connecting-rod bearings and crankshaft bearings. The oil may be drained from the reservoir by removing suitable plugs at the bottom of the reservoir. In a similar way the oil screen and pump foot valves may be removed from the outside for inspection and cleaning. The timing gears are all helically cut to reduce gear sound to a minimum and run in oil. They are accurately cut to run without noise, at all speeds. The crank, cam and pump shaft gears are of soft steel, the idler gear of cast iron. This provides a steel and cast-iron contact at all points of engagement.

Water circulation is afforded by means of a centrifugal pump mounted on the right-hand side of the motor. The pump is of bronze throughout and is supplied with two large bearings and two stuffing boxes. A drain cock is provided at the lowest point to drain all water from the housing in freezing weather. The motor is regularly equipped with the Remy dual magneto and a Stromberg model 4 B carbureter.

A multiple disk dry plate clutch is used. It has fourteen steel plates, alternate plates being faced with Raybestos. The clutch throw-out clevis is provided with two annular ball bearings which reduce wear at this point. These bearings rotate only at the instant of release of the clutch and will, therefore, wear indefinitely. The clutch is also supplied with a brake for stopping the spinning of the plates when disengaged. The clutch housing within the flywheel is of pressed steel and is bolted in place after which the bolts are wired, absolutely preventing rattling or misalignment. The plates are provided with square slots which en-

gage hardened steel dogs on the inside of the housing. This reduces wear with consequent noise. The clutch pilot shaft is provided with imported annular ball bearings.

The gearset is of the three-speed selective type. The shafts are of 3 1-2 per cent. nickel steel heat treated and the gears are of chrome nickel steel oil treated. The bearings are Timken roller throughout. The gearset and clutch housings are cast in one piece of nickel aluminum alloy and this unit is bolted rigidly to the flywheel housing on the motor. This provides unit power plant construction and assures perfect alignment of motor, clutch and transmission shafts. The gear shift rods are provided with an automatic lock, making the selection of two speeds at the same time impossible.

The rear axle is of the floating type with drive flange and axle shaft forged in one piece. Both axle shafts and propeller shaft are of 1 3-8-inch diameter heat treated chrome nickel steel. The entire weight of the rear end of the car is supported by the wheel carriers, which are made integral with the pressed steel axle housing. The wheel carriers are of nickel steel tubing ground to accommodate the wheel bearings. The axle housing is virtually of one piece pressed from 3-16-inch sheet steel. The axle is supplied with torsion tube inclosing the propeller shaft. The pinion gear is of 3 1-2 per cent. nickel steel oil treated.

The steering gear is of the screw and nut type and is irreversible. The threads on the operating screw are cut right and left handed and the two half nuts, one right and one left handed, connected through a suitable linkage to the steering crank. The steering is on the left side with center control. The wheels are wood and take 34 by 4-inch tires.

There are two styles of body; a five-passenger touring and a two-passenger roadster. They are both fully equipped with acetylene starter, Ward-Leonard lighting system, motor driven tire pumps, top cover, tire carriers, lamps, horn, complete tool equipment, etc.

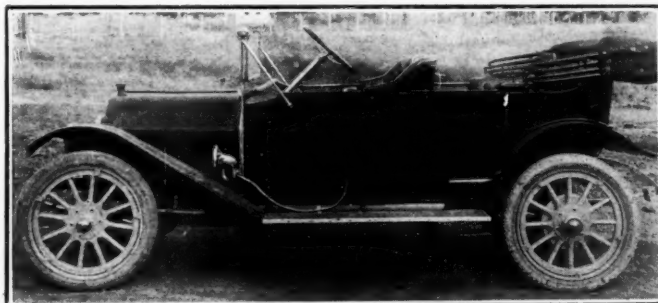


Fig. 2—The Glide five-passenger touring car for 1913

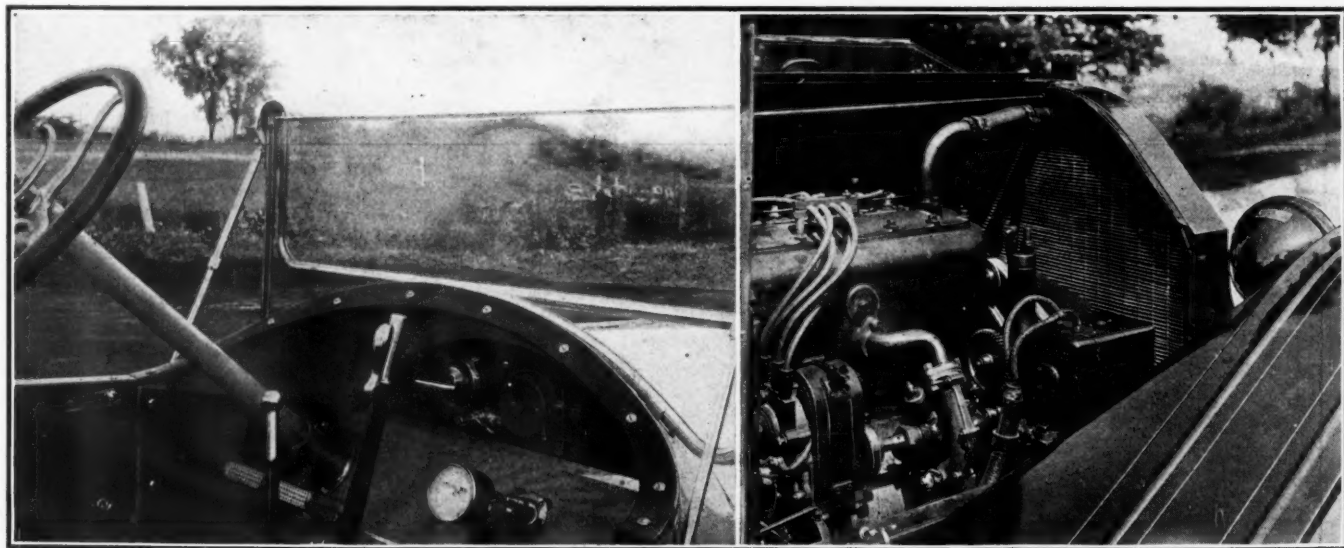
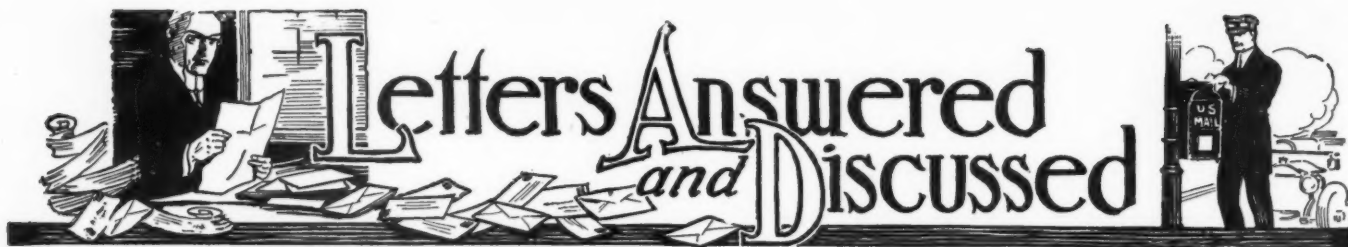


Fig. 3—A view of the dash arrangement and one of the power plants in the latest Glide cars



## Garage Man Complains of Ill Treatment; Installing a Platform Spring; Current for Ignition Purposes; How to Set a Splitdorf Magneto Properly; The Four-Speed Discussion

### Robbed by Rich Hotel Patrons

**EDITOR THE AUTOMOBILE:**—As a garage superintendent in New York handling a portion of the automobile trade of the high-class up-town hotels, I have not infrequently come in contact with patrons of the following sort: They are parties who stop at high-grade hotels and leave their car in my place for several days, after which they take it away, for a ride through the town, as they say, without returning again. I have in several cases traced these people by the lists of license-holders which are published by the various secretaries of state, and while in some instances I have been successful in being paid what these parties owed me either with or without the assistance of the court, there are a good many cases where I have no chance of recovering the money due to me unless these doubtful patrons stop at my place once more.

Such losses of money are bound to increase the overhead expense of a garage very considerably, and a garageman brought face to face with this problem must do either of two things. He may bear the loss himself or, what is very much preferred by the great number of men, make the public at large pay for the dishonesty of a few by raising his charges. Of course, the garageman is blamed if he resorts to such a course. However, it is not blaming what he needs, but help and organization. If the garagemen could see their way to combine and inform one another of their cases of meeting fraudulent patrons, they would render themselves and the public a benefit. A general organization would also bring other similar benefits. A list of stolen cars could be circulated among the garagemen and a large percentage of automobile thieves be exposed. The more orderly the garage business is conducted, the more profitable must it prove and the more service may it render to the public at large.

I would like to know how other garagemen meet this situation, as I believe in New York, at least, it is frequent enough to be serious. In the smaller towns I do not believe that garagemen have to cope with such things.

New York City.

A. C. VILLARD.

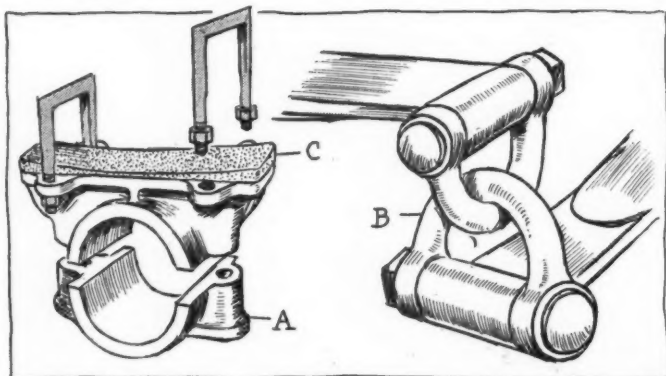


Fig. 1—Fixtures for spring installation; A, spring pad; B, double shackle; C, fiber block filed to shape

### Altering the Car's Suspension

**Editor THE AUTOMOBILE:**—Will you kindly answer the following:

1. How could a platform spring be fastened under the rear end of a Ford T car?
2. How can the oiling system on a Ford T car be adjusted so as to limit its feed to the cylinders?

Berwick, N. D.

H. W. ARNOLD.

—If you are bent on altering what is now a perfectly good and satisfactory suspension for a light car, it is a job that will call for a shop equipped with tools for sawing channel iron, riveting, drilling and tapping. In order that the propeller shaft and the distance rods will not have to be altered the wheelbase will be left the same, although the overall length of the car will be materially increased.

The two side members of the car are sawed through as in Fig. 3. The spring is disconnected in the rear from the shackles which hold it to the rear axle. The purpose is now to insert in the blank left by sawing off the rear end of the T-shaped piece which will connect the end of the frame and also for the forward support for the platform rear spring. The details of the job may best be seen in the accompanying sketches, Figs. 1 and 3. It will be seen that the same cross spring that you now have on the car will be used for the cross-members of the platform rear springs. There will be two semi-elliptic members inserted in the system, one on each side. The spring pad in the rear axle to take the semi-elliptic member may be purchased of any concern handling forgings. They come of the correct size to fasten to the rear axle and have a flat, smooth pad to take the spring. As long as the pad is flat there is a chance that it will be difficult to keep the U-clips tight on account of the fact that the spring touches only at one point. If a fiber piece is taken and filed out to conform to the curvature of the spring it will be much easier to keep these clips tight.

At the front end of the new spring an ordinary shackle will be used. This will be attached to the cross-member which is inserted for the sake of strength and safety, by a forging which will be of the correct shape to hold the shackle properly. If it is found that the installation fouls the distance rods, short torque members could be inserted between the cross-piece and the rear axle. These would have to be strong and situated as far from the axis of symmetry of the car as possible. Some of the special parts which it would be necessary to purchase are shown in Fig. 1. Altogether, this would be a costly job, although it probably could be done satisfactorily along the lines laid out. The spring suspension of the Ford car as it stands at present has been the result of many years' work by competent engineers and it is difficult to see why it should be changed in any one special case.

The level of the oil in the Ford lubricating system is controlled by two try cocks, shown at A and B, Fig. 2. The upper cock A marks the level above which there should never be any oil. The lower cock is the danger level. When the oil gets



below this there is an insufficient quantity. Open the upper cock and let all the oil flow from the crankcase that is above this point and then open the lower cock until the level is about half way between the two cocks. Now try the motor and if it smokes the cause is probably worn piston rings. These cost 15 cents apiece.

### Using Too Much Current

Editor THE AUTOMOBILE:—Would you kindly inform me what is the right number of dry cells to use for ignition purposes for a four-cylinder Winton car, equipped with a Splitdorf coil?

At present I am using eight cells, which will give good service until they become as low as 10 amperes. Then the engine will begin to miss. How can I get more service from these cells? Will changing the mixture do any good? Also, is there anything that will dry rubber that has been remelted? I mean the kind that has been previously used in the manufacture of tires.

Hoods Mill, Md.

C. W. CAUTHORN.

—You are using entirely too many cells if you have them connected in series. The ignition system on your car is designed for 6 volts and you are using at least 10. Do not use any more than five cells if they are new or six cells if the current is weaker. On account of using such a high voltage there is no doubt that the vibrator points on the coil are worn; these should be dressed down with a file and adjusted so that the correct intensity of spark will be given at the plugs. Examine the vibrator points and see if they are flat and clean. Turn on the switch and gradually turn over the motor; if the vibrator does not buzz at once, turn until it does. Now turn the vibrator adjustment screw until the clear humming sound indicates that the vibrator is working as it should. There will be no mistaking the correct sound when it is heard.

When the coil has been adjusted properly and is known to be in good working order it would be well to clean the contact points in the spark-plugs so that the ignition system will not be faulty owing to neglect at such a point as this. Remove the wires from the plugs and take them entirely out of the cylinders, soak them well in gasoline, taking off all the carbon that may be located around the electrodes. After the plugs have been thoroughly cleaned they can be reconnected to the wires, but should not be put back in the cylinders until they have been tested. To test the plugs lay them on their sides on the cylinders, open the compression cocks and turn the motor over slowly, noticing the spark in each plug. If it is found that the spark is good in one and not in other plugs, the chances are that the plugs showing the weak sparks have the gap too wide. The fact that you have been compelled to use such a high voltage to get satisfaction makes it very possible that the gaps in one or more of the plugs are too far apart. After making these simple adjustments, if the coil will not work satisfactorily return it to the makers. Do not attempt to take it apart yourself.

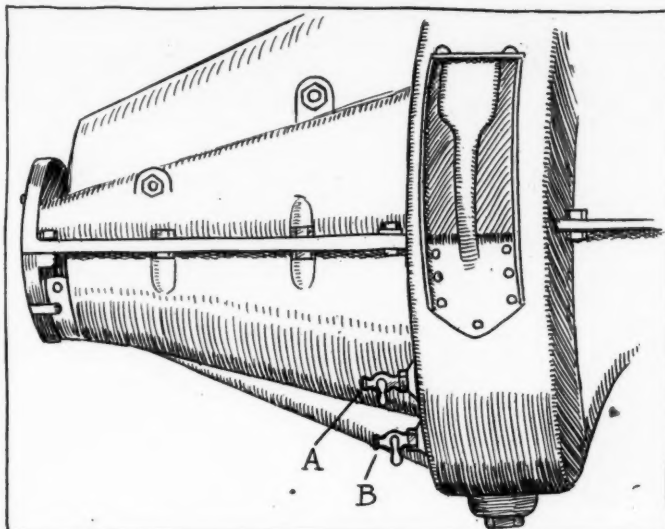


Fig. 2—Trycocks for oil level on the Ford flywheel housing

Do not attempt to change the mixture until after you are sure that the ignition system is working correctly. This will be determined by the test of laying the plugs on the cylinders and turning over the motor. If the ignition is as it should be and you still do not get good results, it is then time to make carburetor adjustments. It is hardly likely that you will need any.

Rubber that has once been melted will be destroyed structurally and will be of no practical use for any purpose that requires strength. Exposure to the atmosphere will eventually dry out the rubber that has been melted.

### Setting a Splitdorf Magneto

Editor THE AUTOMOBILE:—I have an E. M. F. 30, and would like to know if you could publish a diagram showing how to time a Splitdorf timer for heavy pulling, showing how the piston should set ready to fire. I would also like to know whether the differential sings when the Timken roller bearing on the main shaft is worn? If not, is there any way to stop it from singing?

Inverness, Fla.

E. M. F. 30.

—Assuming that the magneto is in place on the motor, turn the starting crank with the pet cocks on the cylinders open until the number one, or foremost, cylinder is on upper dead center, that is, when the piston is at its highest point. You will be able to ascertain this by looking at the flywheel which is marked to show its position when the number one cylinder is in this position. The motor should be kept in this position throughout the entire operation.

First retard the spark advance mechanism at the steering

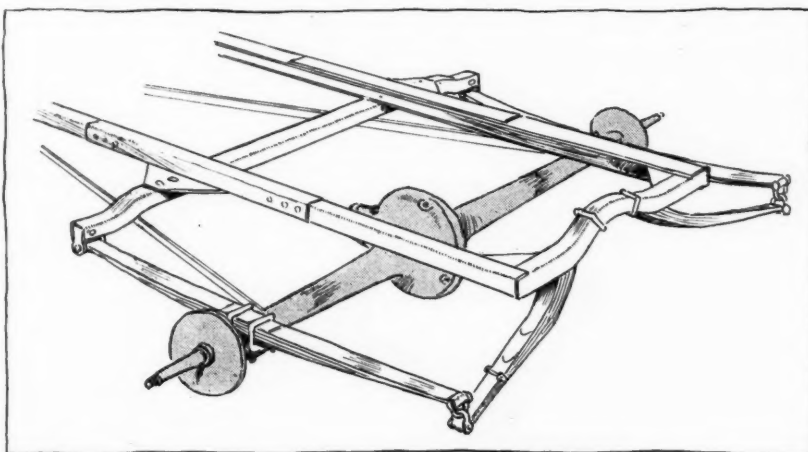
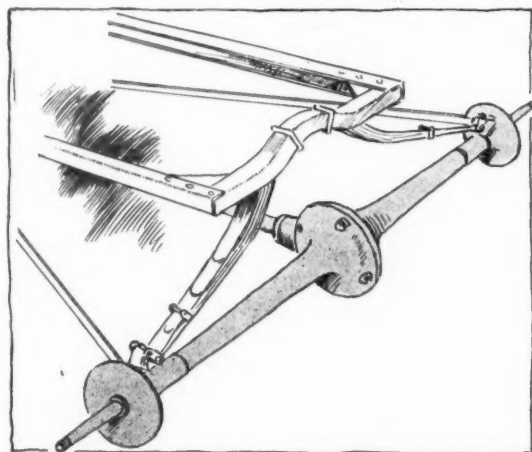


Fig. 3—Original suspension of the car and appearance after platform spring has been installed

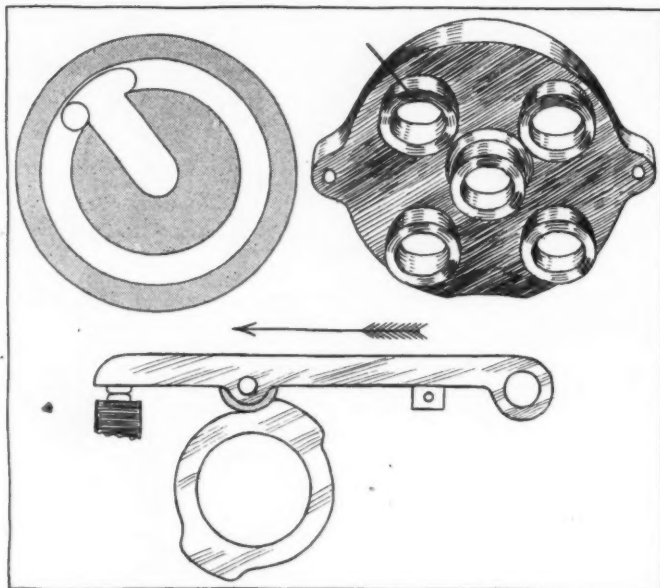


Fig. 4—Position of distributor and opening in cover to which the wire from number one cylinder is connected; a view of the circuit breaker

wheel to its limit and connect it to the spark advance lever on the breaker box of the magneto, so that if the magneto shaft revolves in a clockwise direction looking at the driving end, the breaker box lever will be at its topmost position. If the shaft revolves left-handed the lever should be at the bottom limit and advance upward.

As all four-cylinder, four-cycle models run at crankshaft speed it is customary to drive either geared direct to the crankshaft or by means of a universal coupling known as the "Oldham" coupling. The latter method is very much to be preferred

TABLE I.—VARIOUS TRANSMISSION RATIOS IN TERMS OF PERCENTAGES OF THE DIRECT

Name	C	B	Four Speed, Direct on Fourth			
			1	2	3	4
Alco.....	4 & 6	3.0	29	48	72	100
American.....	4	3.0	23	50	75	100
Berkshire.....	6	2.8	29	51	68	100
Chalmers.....	4 & 6	3.8	29	54	75	100
Fiat.....	(4) & 6	3.5	28	43	64	100
Locomobile.....	(4) & 6	3.2	25	53	72	100
Matheson.....	4	3.4	21	34	67	100
Noon.....	4	3.1	25	40	62	100
Oldsmobile.....	4 & 6	3.5	31	44	62	100
Palmer-Singer.....	6	3.9	34	55	75	100
Peerless.....	4 & 6	3.2	28	52	73	100
Pierce-Arrow.....	6	3.3	28	50	75	100
Simplex 38.....	4	2.4	34	51	75	100
White.....	6	3.1	29	46	69	100
Average above 14 makes.....			28	48	69	100

TABLE II.—FOREIGN CARS—FOUR SPEED, DIRECT ON FOURTH

Name	C	B	1	2	3	4
Alldays.....	6	2.8	25	50	83	100
Argyll.....	4	3.7	22	46	67	100
Armstrong-Whitworth....	6	3.3	28	41	65	100
Arrol-Johnston..	6	3.5	22	43	64	100
Austin.....	6	2.2	30	50	71	100
Berlier.....	4	3.0	34	48	67	100
De Dion-Bouton.	8	3.7	24	39	59	100
Delanunay-Belleville....	6	3.1	26	41	65	100
Hotchkiss.....	6	2.9	24	44	66	100
Daimler.....	(4) & 6	3.8	24	49	75	100
Lancia.....	4	3.1	25	42	61	100
Mercedes.....	4	3.0	23	44	70	100
Opel.....	4	3.0	27	46	75	100
Panhard-Knight.	4	.	29	50	79	100
Peugeot.....	4	3.0	25	43	75	100
Pilain.....	4	2.4	22	39	71	100
Renault.....	6	2.2	26	51	71	100
Wolseley.....	(4) & 6	3.6	28	46	67	100
<hr/>						
Average of above 18 makes.....		3.1	26	45	70	100

to the former, because the accurate setting and alignment absolutely necessary with the direct gear on the armature shaft is not essential with the latter method. There is another drive possible, the chain, but on account of the many wearing points, back slack, etc., this should only be used where gear drive is impossible on account of inaccessibility, or where a large number of gears are objectionable.

If the "Oldham" drive is employed the driving flange is first slotted to fit the Woodruff key supplied with the magneto and then fitted. The other flange of the coupling is left loose on the end of the pump shaft or other shaft used to drive the magneto and the cross block is slid into place.

Now revolve the armature shaft in its direction of rotation until the oval breaker cam comes in contact with the roller in the breaker bar and just begins to separate the platinum contacts, Fig. 4.

The flange of the coupling can then be drilled and reamed for a taper pin and the timing of the magneto is then permanently effected.

After ascertaining the position of the bronze sector of the distributor, Fig. 5, connect the cup directly, shown in the same illustration, over it to the spark-plug in cylinder No. 1. Since the direction of rotation of the distributor is always opposite to that of the armature shaft, the wire from the cup next in rotation goes to the next cylinder in sequence of firing and so

TABLE III.—VARIOUS TRANSMISSION RATIOS

Name	C	B	Four Speed, Direct on Third			
			1	2	3	4
Chadwick.....	6	3.0	33	66	100	130
Garford.....	4 & 6	3.5	27	57	100	117
Interstate.....	4	3.0	33	50	100	120
Kissel-Kar.....	4 & 6	3.8	39	59	100	131
Lozier.....	4 & 6	3.1	34	63	100	120
Marquette.....	4	3.5	29	50	100	113
Morse.....	4	3.4	36	64	100	122
Palmer-Singer.....	6	3.6	38	74	100	144
Pope Toledo XV.....	4	..	26	64	100	125
Stuyvesant.....	4	3.5	40	58	100	130
Winton.....	6	3.4	32	69	100	126
Average of above 11.....			33	60	100	125

Name	C	B	FOREIGN CARS Four Speed, Direct on Third			
			1	2	3	4
Ariel.....	4	3.9	30	60	100	122
Enfield.....	4	4.1	29	60	100	120
Average of above 2.....			30	60	100	121

on until all four are connected. Four-cylinder, four-cycle motors always fire either 1, 2, 4, 3 or 1, 3, 4, 2, the latter being the most general rule.

### Anent the Four-Speed Discussion

Editor THE AUTOMOBILE:—There have been some interesting and some amusing opinions aired in the current four-speed transmission discussion. Personally, the worm must turn with my failure to appreciate the correctness of the method of determining gear ratio steps as introduced by S. I. Fekete in your issue of August 15.

I learn that "the gears in a transmission should progress in a geometrical ratio because the resistance increases in the velocity interval in a hyperbolic curve." Without discussing the truth of the latter clause, I fail to see why it is a rule or reason for the hypothesis preceding it.

Mr. Fekete gives two equations for forces acting when a car is in motion:

$$\text{resistance} = \text{tractive force}$$

for that case where the velocity is uniform, and

$$\text{force to cause acceleration} + \text{resistance} = \text{tractive force}$$

for that case in which the car is being accelerated. While Mr. Fekete's Fig. 1 seems to distinguish between road resistance and air resistance, his formulas do not; yet the two resistances are of quite different nature, the former probably varying di-



rectly with the speed, while the latter varies more nearly with the cube of the speed.

Let us introduce still another equation which will represent more nearly the general case:

delivered HP = tractive effort = force to cause acceleration

+ road resistance + air resistance + work of lifting.

It is understood that in this equation the sign of the first term will become minus if deceleration be substituted for acceleration, and similarly the sign of the last term will become minus if a grade be descended instead of ascended.

It is true that in this equation there appear terms which have a bearing upon the question of proper transmission gear ratios, but air resistance is not one of them, as Mr. Fekete would have us suppose. Rather do road resistance and work of lifting give

TABLE V.—PERCENTAGE ERRORS IN ARRANGEMENT BY ARITHMETICAL PROGRESSION AND BY GEOMETRICAL PROGRESSION ASSUMING AVERAGES IN TABLE I AS STANDARDS

Arithmetical Progression						
Class	1	2	3	4	Algebraic Mean	Max.
(1) Four speeds, direct on 4th.	-11	+4	+7	.....	0	-11
(2) Four speeds, foreign practice.....	-4	+11	+7	.....	+5	+11
(3) Four speeds, direct on 3d.	0	+11	.....	+6	+6	+11
(4) Four speeds, foreign practice.....	+14	+11	.....	+10	+12	+14
(5) Three speeds.....	+3	+14	.....	.....	+9	+14
(A) Mean of above.....	+0.6	+10	+7	+8		
Arith. Mean of (A)=6.4						
Geometrical Progression						
(1) Four speeds, direct on 4th.	-36	-31	-19	.....	-29	-36
(2) Four speeds, foreign practice.....	-31	-27	-19	.....	-26	-31
(3) Four speeds, direct on 3d.	-33	-23	.....	+72	+5	+72
(4) Four speeds, foreign practice.....	-24	-23	.....	+78	+10	+78
(5) Three speeds.....	-30	-22	.....	.....	-26	-30
(B) Mean of above.....	-31	-25	-19	-75		
Arith. Mean of (B)=38						

the true clue to the situation, and if these terms can be expressed as functions of car velocity I should be interested to learn how.

And, again, assuming the resistance to bear a known relation to the velocity, I am still unable to see how it follows that the correct increments of progression are thus determined. Velocity-resistance laws involve a consideration of the manner in which required power increases with speed; transmission gear ratios involve a consideration of various speeds and torques at a constant power. To consider the two as interdependent seems like adding quinces and apples to get pears.

Taking current practice as a criterion I am still unable to justify the method of geometrical progression. In the appended Table I (some of the data of which has been transposed from an article by D. S. Hatch in *Motor Age* for July 18) are given the gear ratios of some conventional transmissions in which the steps are given in terms of percentages of the direct gear. This form of tabulation is, I believe, more comprehensive for analytical study than that which deals with total reductions. The fact that manufacturers almost invariably offer an option on final reduction ratios makes tables or diagrams of total reduction unfit for purposes of comparison. In column "B" of Table I is given the final drive ratios, and by means of this the total reduction on any gear may be readily found. Column "C" shows the number of cylinders of cars listed.

Table 2 shows at a glance the mistake of assuming a division according to a geometrical progression. In each type considered this method is found to be greatly in error. On the other hand, the arithmetical progression is always reasonably close to the average standard practice, and in the case of four-speed transmissions—which, incidentally, seem to have started this controversy—it seems to be an excellent standard to go by.

As Mr. Fekete says, it is not probable that the ratios of any accepted standard can be duplicated in practice due to the necessity of maintaining a constant center distance and the use

TABLE IV.—VARIOUS TRANSMISSION RATIOS

Name	C	Three Speed, Direct on Third			
		B	1	2	3
American.....	4	4.1	39	64	100
American.....	4	3.2	31	58	100
Amplex.....	4	3.0	31	64	100
Bergdoll 30.....	4	...	30	61	100
Berkshire.....	4	3.0	30	66	100
Brown-Lipe.....	4	...	33	53	100
Cameron.....	4	3.5	37	78	100
Cameron.....	6	3.5	29	65	100
Cadillac.....	4	3.4	27	55	100
Chalmers.....	4	3.8	30	62	100
Dorris.....	4	3.6	30	53	100
Driggs-Seabury.....	4	...	43	64	100
Everitt.....	4 & 6	3.5	27	50	100
Fellows "Typical".....	4	...	35	57	100
Herreshoff.....	4	4.0	27	57	100
Hupmobile.....	4	3.6	28	55	100
Inter-State.....	4	3.0	30	50	100
Jackson.....	4	3.5	29	58	100
Marmion.....	4	...	33	60	100
Maxwell.....	4	3.5	30	37 ( )	100
Midland.....	4	3.0	27	59	100
Midland.....	4	3.0	30	52	100
Moon.....	4	3.5	37	66	100
Ohio.....	4	4.0	27	50	100
R. C. H.....	4	4.0	36	66	100
Reo.....	4	3.7	32	59	100
Selden.....	4	3.5	31	49	100
Standard Roller.....	4	...	28	60	100
Stearns-Knight.....	4	3.9	33	65	100
Stevens-Duryea.....	6	3.5	29	52	100
Stoddard-Dayton.....	(4) & 6	3.1	28	60	100
Stutz.....	4	3.5	44	78	100
Average of above 32.....			32	59	100.

of reasonable pitches. However, if a standard be chosen, the acceptance of it should be justified, and the method introduced by Mr. Fekete may very well be misleading.

Forty-Fort, Pa.

N. S. SEELEY.

### Trouble with Electric Lights

Editor THE AUTOMOBILE:—I have installed an electric attachment in a Ford car, to be run from the Ford magneto. I am using a 2-candlepower, 6-volt lamp, but am having trouble in the lamps burning out after having been run for a few minutes.

Kindly state what voltage, amperage and candlepower lamps should be used in connection with the Ford magneto.

Wilton Junction, Iowa.

H. AMUNDSEN.

—You do not mention what particular lighting outfit you are using, so it is impossible to tell the exact nature of the trouble. It is probable that the trouble lies in the wiring. The correct method of wiring the headlights is shown in the accompanying diagram, Fig. 5. You should use two lights of 10 or 12 candlepower connected in series. The voltage used with these lamps is six and the reflectors are generally of 9-inch diameter.

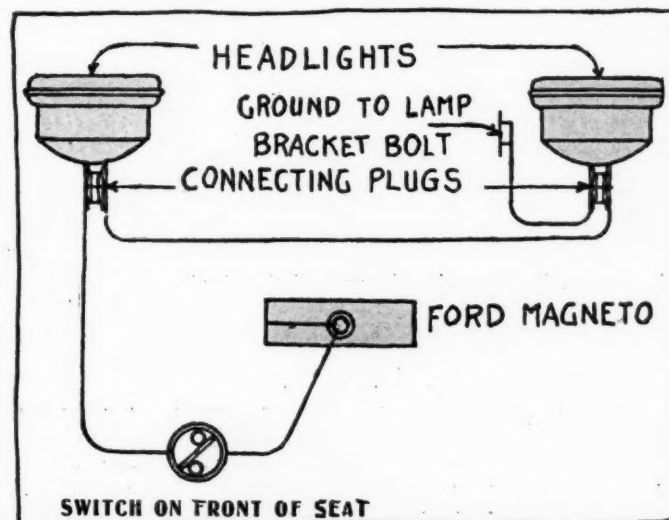
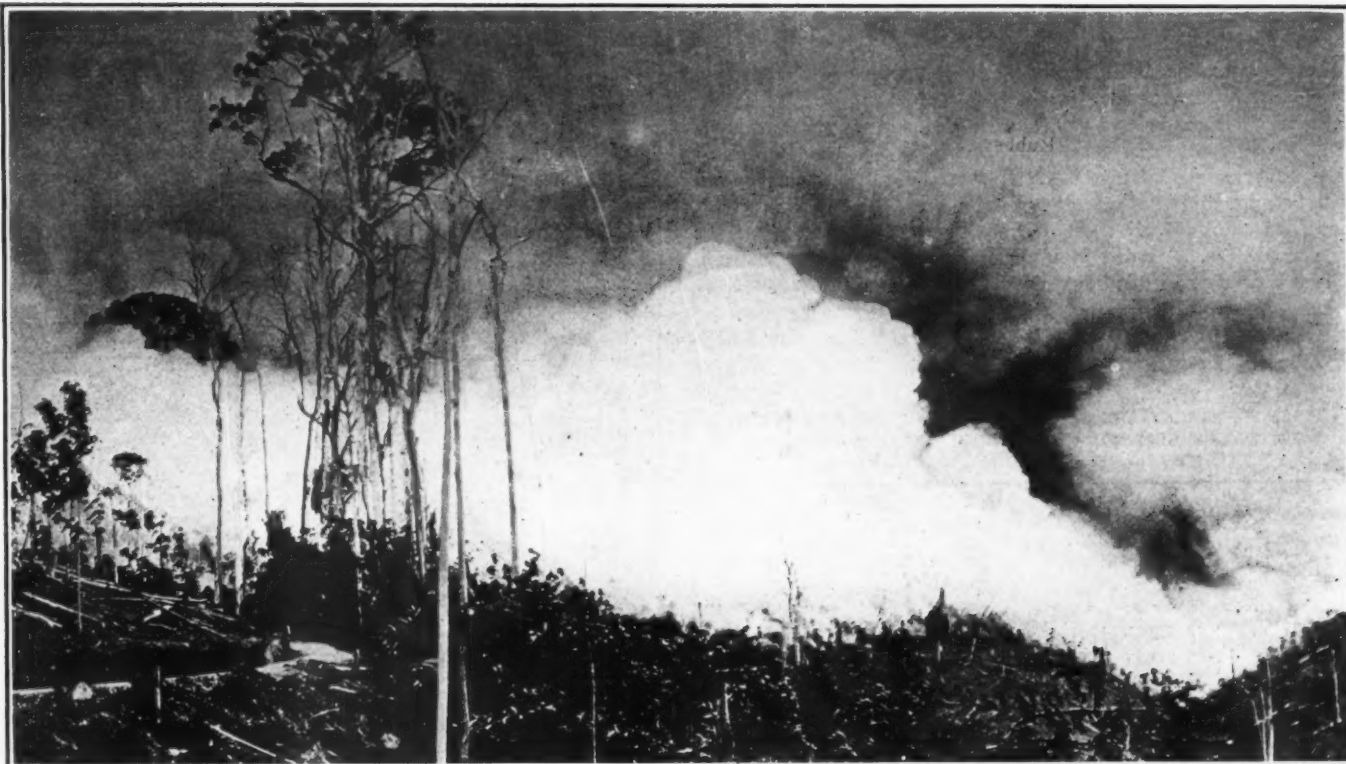


Fig. 5—Wiring diagram of the Ford headlights as it should be when system is operated from the fly wheel magneto



Before the land is planted with little rubber trees, the jungle is burned away and the ashes are used for fertilizer

(Continued from page 565)

bale-like packages. Experiments are being made in Hawaii with the castilloa tree. It is estimated that several thousand acres could be devoted to rubber culture in the Hawaiian archipelago.

The Philippine Islands are represented by a small exhibit, showing the progress that has been made in that archipelago since the American occupation. The climate of both of the Pacific island territories of the United States is suitable for rubber culture, but so far the results attained are merely promises for future performance. In Hawaii this progress has been swifter than it has in the Philippines.

The program of the conference is as follows:

Tuesday, September 24, at 2 p. m.—An address of welcome by the president, Mr. Henry C. Pearson. The topic for discussion will be "Crude Rubber." Special papers:

"Rubber Contracts," by Mr. Arthur W. Stedman.

"The Plantation Industry," by Cyril E. S. Baxendale, Esq., of the Federated Malay States.

"Various Manihots Producing Rubber in the Central States of Brazil," by Dr. J. Santiago Cardwell-Quinn, commissioner.

"Possible Rubber Producers in the Temperate Zone," by Mr. Charles P. Fox, Akron.

"Some Effects of Acclimatization Upon Guayule. Parthenium Argentatum," by Francis E. Lloyd, Montreal, Canada.

Wednesday, September 25, at 10 a. m.:

"Problems in Vacuum Drying," by Mr. J. P. Devine.

"Manufacture of Dipped Goods," by Mr. T. W. Miller.

"Physical Methods of Testing Rubber and Rubber Products," by Mr. P. L. Wormeley, Bureau of Standards, Washington.

"Factory Management and Organization Methods," by Mr. J. C. Jurgensen (president of the Institute of Operating Engineers), and Mr. Frederic Dannerth (consulting chemist).

Thursday, September 26, at 10 a. m.:

"A Brief History of Fire Hose Specifications," by E. A. Barrier.

Topical discussion on specifications (mechanical rubber goods for railroads, federal and municipal governments), including as sub-topics: Air-brake hose, railroad steam hose, fire hose, etc.

"The Commercial Possibilities of Synthetic Rubber," by Mr. L. E. Weber, Boston, Mass.

Friday, September 27, at 10 a. m.—A report of the transactions of the Navy Conference at Washington, December, 1911, by Mr. E. S. Land, U. S. N. Topical discussion on specifications: (a) Materials for insulated wire; (b) textile materials (sheeting, duck and yarns).

A preliminary report of activity by the "Railroad Committee" on "Standard Methods of Testing Rubber Products."

At 7 p. m.—Informal dinner for rubber chemists and engineers. (Place to be announced Friday morning.)

Saturday, September 28, at 10 a. m.—Meeting for the presentation of resolutions and recommendation of official methods for physical testing and chemical analysis of crude gum and manufactured rubber goods.

Discussions—A considerable number of topics for discussions have been forwarded to the secretary by manufacturers as well as consumers of rubber goods. These will be presented on the appropriate days.

The following societies will be represented by official delegates:

American Chemical Society.

American Society for Testing Materials.

Society of Chemical Industry.

American Institute of Chemical Engineers.

German-American Technical Society.

Institute of Operating Engineers.

The following governments will be represented by official delegates: Federal Government of Brazil, Federated Malay States and Straits Settlement, Ceylon, Hawaiian Islands, Province of Moro, Philippine Islands, Burma (India).

The State of Amazonas (Brazil), The State of Matto Grosso (Brazil), The State of Para (Brazil), The State of Acre (Brazil), The State of Minas Geraes (Brazil), Bolivia, Republic of Honduras, State of Bahia (Brazil).

President of Conference—Henry C. Pearson, New York City.

Honorary Secretary—Frederic Dannerth, Ph.D.

Executive Committee—E. S. Land, U. S. N., Washington, D. C.; D. A. Cutler, New York; Dr. Lothar Weber, Boston, Mass.; Dr. W. C. Geer, Akron, O.; Dr. S. P. Sharples, Boston, Mass.; Dr. Eugenio Dahne, Brazil; C. E. S. Baxendale, Esq.,



Federated Malay States; F. Crosbie-Roles, Esq., Ceylon; A. Staines Manders, London.

The list of exhibitors includes the following:

The United States Rubber Company, Broadway, New York City—all descriptions of manufactured rubber goods.

The Swinehart Tire & Rubber Company, Akron, O.—tires and other rubber goods.

The Home Rubber Company, Trenton, N. J.—all kinds of hose, packings, tires, etc.

Manhattan Rubber Company, Passaic, N. J.—a circular loom weaving fire hose jackets, ornamental rubber flooring, conveyor belt in action, moulded goods, etc.

Victoria Balata & Textile Belting Company, New York City.

Dutch Guiana Culture Company—a plantation showing hevea trees at different ages—method of tapping, samples of rubber; also coffee plants and coffee, used as a catch crop.

New York Commercial Company—samples of crude rubber from wild trees and from planted trees.

Henderson & Korn—samples of standard grades of rubbers.

United Malaysian Rubber Company—samples of rubber grown on their estate in the Federated Malay States.

Meyer & Brown—samples of crude rubber.

Rubber Trading Company—samples of crude rubber.

Raw Products Company—samples of crude rubber.

Highlands & Lowlands Para Rubber Company—samples of plantation rubber.

Kalisyndikat—rubber trees, tropical fruits, etc., showing the beneficial effects of manuring with potash.

Buffalo Foundry & Machine Company—vacuum dryers—one very large dryer weighing 20 tons—vacuum pumps, steam hammers, etc.

United Shoe Machinery Company—eyeletting and grommeting machine in operation.

The Turner, Vaughn & Taylor Company—motor-driven experimental outfit—washer, mixing mill, etc.

John Royle & Sons—perfected tubing machines.

Farrel Foundry & Machine Company—experimental calender, grinder and washer.

Werner & Pfeleiderer—kneading machines, washers, presses, etc.

J. P. Devine Company—vacuum dryers, deresinating and solvent apparatus.

The Curtis & Marble Machine Company—brushing machine for cleaning goods and liners, sewing machine, etc.

The Adamson Machine Company—automobile tire moulds and cores and models.

Hoggson & Pettis Manufacturing Company—moulds of all descriptions, dies, etc.

The Philadelphia Rubber Works Company—reclaimed rubber.

E. H. Clapp Company—reclaimed rubber.

American Rubber Reclaiming Company—reclaimed rubber.

Rubber Regenerating Company—reclaimed rubber.

United States Rubber Reclaiming Works—reclaimed rubber.

New Jersey Rubber Company—hard rubber goods and mechanical rubber goods made from reclaimed rubber.

Monatiquot Rubber Works Company—"Naturised" rubber.

American Wax Company—mineral rubber.

J. W. Coulston & Company—chemicals and colors.

American Asphaltum & Rubber Company—compounding ingredients.

George A. Alden & Company—M. R. for strengthening and preserving rubber.

The Loewenthal Company—reclaimed rubber.

The New Jersey Zinc Company—reclaimed rubber.

H. Muehlstein & Company—scrap rubber.

Electric Rubber Reclaiming Company.

Tyson Brothers, Inc.—rubber substitutes.

The Essex Rubber Company—sheet rubber soling, automobile accessories, asbestos and rubber engineering specialties, etc.

The Diebold Safe Company.

Boston & Bolivia Rubber Company—crude rubber.

Edward Maurer—samples of various grades of rubber.

The Electric Rubber Reclaiming Company—reclaimed rubber.

Charles T. Wilson—rubber broker, New York City.

La Favorite Rubber Manufacturing Company, Paterson, N. J.

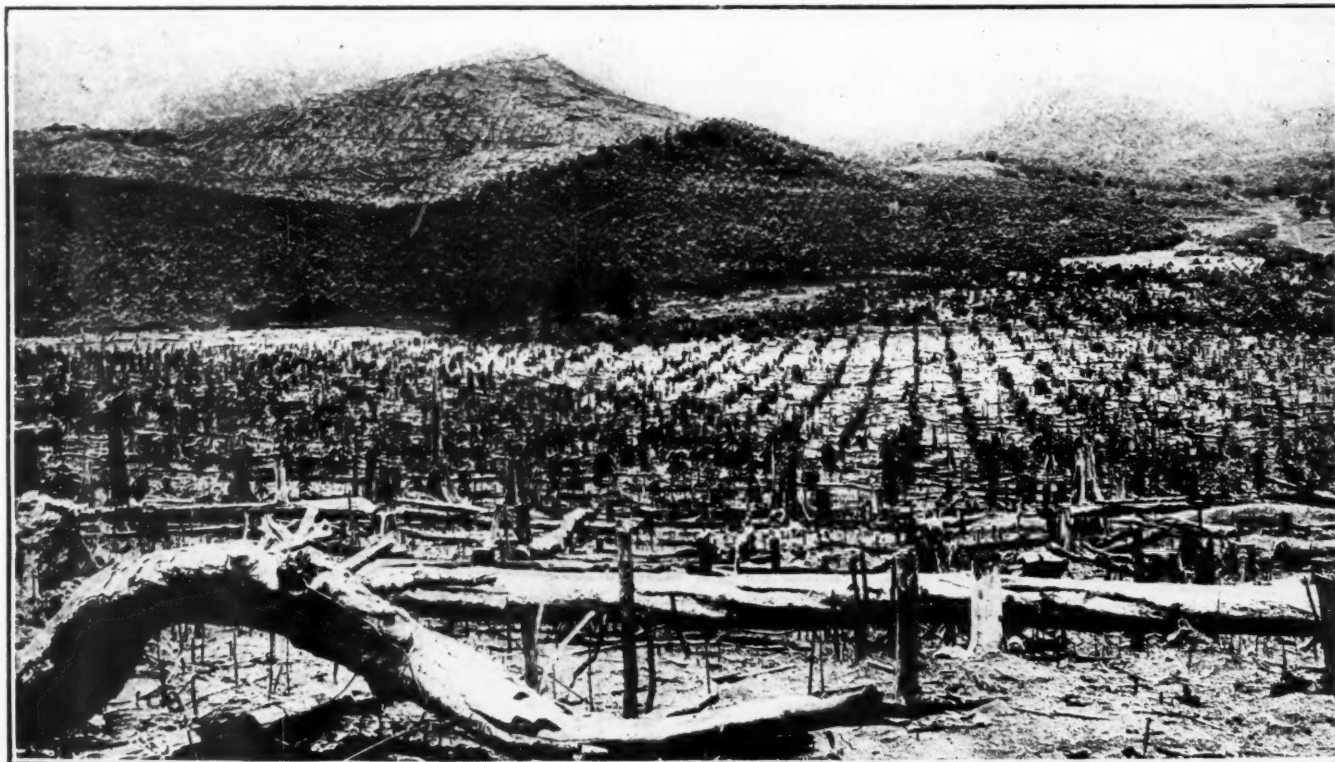
General Rubber Company, New York City.

Bartica Crude Rubber Company.

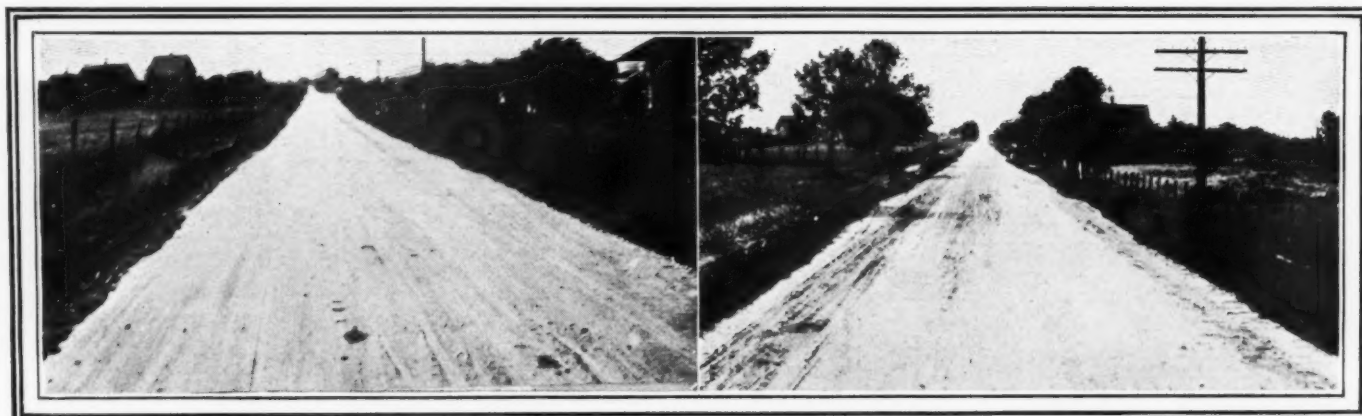
Acushnet Process Company, New Bedford, Mass.

Boston-Bolivia Rubber Company, Boston, Mass.

Lehmann & Voss, Hamburg, Germany—chemicals.



Malayan rubber plantation with trees 1 year old—Such a plantation may be expected to yield in 4 years' time



View of straightaway on North Fond du Lac road

Long straightaway stretch on Town Line road

## All Eyes On Milwaukee

### Despite Postponement of Grand Prize Until Monday—Races Center Attention of Motordom

#### Promoters Display Much Energy in Belated Effort to Get Course in Shape for Speed Trials

MILWAUKEE, Sept. 17—(Special Telegram)—Rain during the last 72 hours interfered with practice on the course today to such an extent that DePalma, in his Mercedes, was the only one to make an effort for time. He accomplished the fastest time so far recorded in the practice; covering the 7.8 miles in 7 minutes and 15.03 seconds, averaging 64.7 miles an hour. During the 2 hours of practice today the best laps made were as follows:

Car	Driver	Time		Average speed miles per hour
		min.	sec.	
Mercedes	DePalma	7	15.03	64.7
Knox Six	Mulford	7	30	63.2
Lozier	Nelson	8	15	57.5
Mercedes	Wishart	8	12	57.6
Fiat	Bruce-Brown	9		52.7
Mercedes	Bragg	9		52.7
Fiat	Tetzlaff	10	14	46.7
Case	Nikrant	11	55	41.0

DePalma's lap was the only one timed by the Warner electric timing instrument which was not ready during the earlier laps. There was but 2 hours' practice, the time being extended to 4 hours for Wednesday.

A new entry, a Bergdoll car, has been entered. The lists will not close until Thursday. The driver of this car has not been named. By fast work the promoters hope to have the track fully restored to condition by the opening race.

Milwaukee's big road racing carnival will open on Friday noon with the first running of the races for the Pabst Blue Ribbon trophy and the Wisconsin Challenge trophy, the big event scheduled as the curtain-raiser, the fourth contest for the Grand Prix of the Automobile Club of America having been changed to the wind-up, which will take place on Monday, September 23, following the Vanderbilt on Saturday, September 21.

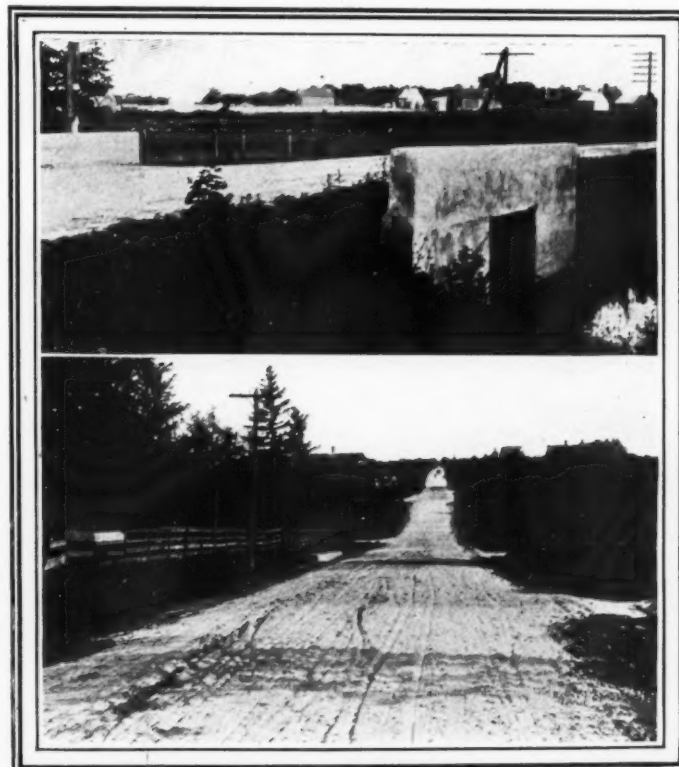
The necessity of a change in the program so that the first events would be set back to give the Milwaukee Automobile Dealers' Association the better part of an additional week to get their course in shape, was anticipated by the inner circle for some days in advance of Thursday, September 12.

The action temporarily staggered the promoters, but all realized the absolute necessity of the change, and then started out to make good. The road construction contractor and his assistants were fired on the spot and some new and fresh blood in-

fused into the thing. Friday morning the dealers cast off their blue spectacles when they saw a half dozen gangs of workmen driven at top speed by the new bosses, actually accomplishing something worth while. The course fairly grew while one looked and the fast work was carried on throughout the night by the light of torches and headlights focused to the best advantage. Monday night, the last drop of oil was on the roads and the final coating of sand was being applied. Starter Wagner announced that official practice would positively start at 11 o'clock Tuesday morning—which, by the way, is the hour at which the Grand Prix was to have been started on that day.

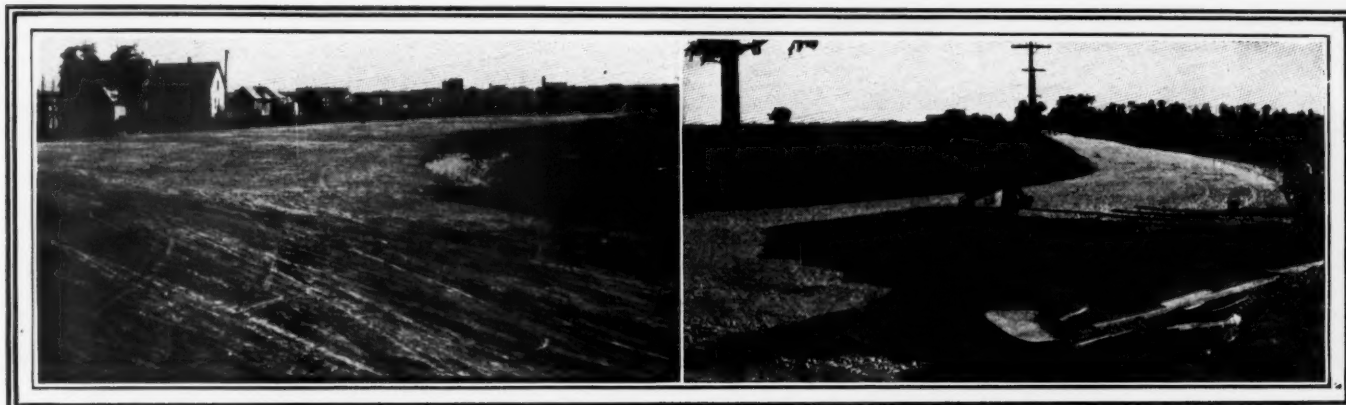
The new arrangement gives the light car drivers two full days of practice; the Vanderbilt contestants four days, and the competitors in the Grand Prix six whole days in which to tune up their cars and make that close acquaintance with the roads which is so necessary to make the best speed possible. Only an insane driver would attempt to start a race of the importance of the Grand Prix or the Vanderbilt without having an intimate knowledge of every inch of the course.

The change in the program carried over the closing of entries



Upper—One of the 19 new culverts on the course  
Lower—Heaviest grade on the Vanderbilt course





Curve from Burleigh street to Fond du Lac road

Hairpin turn at Somerville surfaced with concrete

for the Grand Prix to Wednesday night. Twelve cars have already been nominated, and it is possible that two or three more will come in, as it is planned to give any entrant in the other three events a chance to be booked for the final race up to Sunday morning. A few of the Vanderbilts have held off because they desire to get through the Saturday race before taking a chance on the Monday race.

The Pabst and Wisconsin Challenge races show only a fair-sized entry list, but both will bring out classy fields. In the Pabst, for 231 to 300 cubic inch cars, there are three Mercers, one Mason, two Falcars and a Case. Judging from past performance, the calibre of the men behind the wheels should make this a most interesting race, for Hughey Hughes and Spencer Wishart will pit themselves against Mortimer Roberts, Hastings and Trussel, Ed Pullen of their own camp, and Joe Jagersberger, who intends to "come back" after being out of the speed game for nearly a year, and with one good leg, at that. The other limb he lost at Columbia, S. C. last November in a bad spill on a dirt track only a short time before the international races at Savannah. If the "Flying Dutchman" cannot stand the

220-mile gaff, Louis Disbrow or Joe Nikrent will help him out, with "Farmer Bill" Endicott as a third substitute.

The Wisconsin Challenge, a 173-mile contest for the little fellows of 161 to 300 cubic inches, will be a three-cornered fight between the Ford, E-M-F and Mason. It is likely this event will be a duel between Frank Kulick and Harry Endicott, as the other three drivers, Cramer and Roy Snyder, of the Mason team and John Heber of the E-M-F, are lesser lights. Heber is a Milwaukee man and will drive a Milwaukee-owned car, an E-M-F of the type used by Frank Witt in all of his races, the property of Dr. Irving H. Fowle, of Milwaukee. The doctor bought the car only a few days ago and after looking high and low for a competent driver, he found Heber, who has done a lot of track work in Buicks but is new on the road.

The line-up in the Vanderbilt will be similar to that in the Elgin National, although there will be seen at Milwaukee such stars as Teddy Tetzlaff, holder of the world's road racing record for average speed, and Louis Disbrow of the Case team.

## VANDERBILT CUP

Saturday, September 21, 1912, at 11 a. m.  
298.5 miles, or 38 laps

1	Knox Six	Ralph K. Mulford	Mulford	4 3/4	5 1/2
2	Mercedes	W. H. Bertrand	Clark	5 1/2	7 1/2
3	Mercer 35C	Mercer Auto Co.	Wishart	4.39	5
4	Mercer 35T	Mercer Auto Co.	Hughes	4 3/4	5
5	Fiat	E. E. Hewlett	Tetzlaff	5 1/4	7 1/2
6	Stutz	Ideal Motor Car Co.	Anderson	4 3/4	5 1/2
7	Stutz	Ideal Motor Car Co.	Merz	4 3/4	5 1/2
8	Lozier Six	Richard H. Knowles	Nelson	4 3/4	5 1/2
9	Mercedes	E. J. Schroeder	DePalma	5.2	7.06
10	Fal	Fal Auto Co.	Trussel or Hastings	4 3/4	5 1/4
11	Case	J. I. Case T. M. Co.	Disbrow	4 3/4	5 1/4

## PABST BLUE RIBBON TROPHY

Friday, September 20, 1912, at 12 m.  
220.6 miles, or 28 laps

1	Mercer 35T	Mercer Auto Co.	Hughes	4 3/4	5
2	Mercer 35C	Mercer Auto Co.	Wishart	4.39	5
3	Mercer 35T	Mercer Auto Co.	Pullen	4 3/4	5
4	Mason Special	F. H. Dussenberg	Roberts	3 3/8	5
5	Fal	Fal Auto Co.	Wilbur or Hastings	4 3/4	5 1/4
6	Fal	Fal Auto Co.	Trussel	4 3/4	5 1/4
7	Case	J. I. Case T. M. Co.	Jagersberger	4 3/4	5

## GRAND PRIX

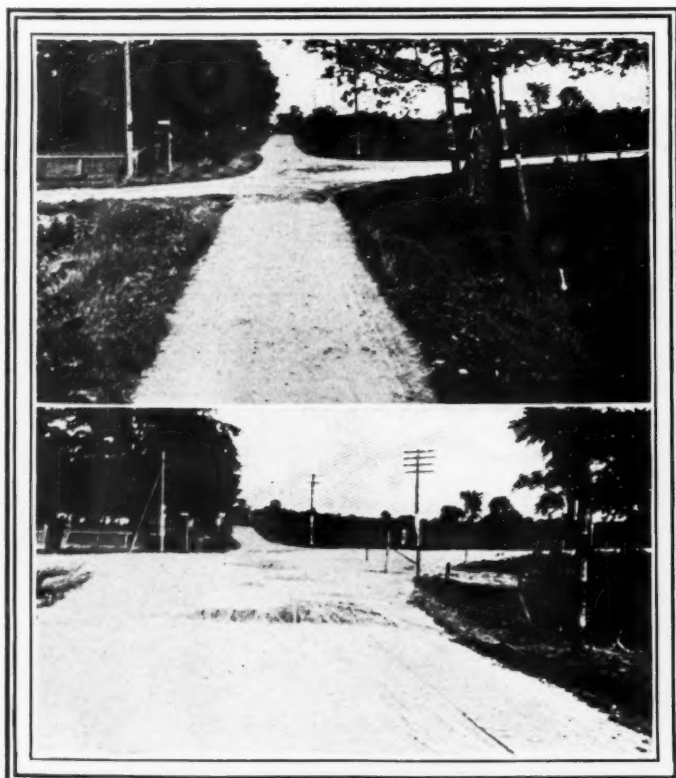
Monday, September 23, 1912, at 10 a. m.  
409.86 miles, or 52 laps

1	Benz 1911 racer	Erwin Bergdoll	Bergdoll	6.2	6.3
2	Benz	E. A. Moross	Burman	.....	.....
3	Benz	Benz Import Co.	Not named	.....	.....
4	Fiat 70	E. E. Hewlett	Tetzlaff	5 1/4	7 1/2
5	Fiat 90	F.I.A.T.	Bruce-Brown	5.9	7.87
6	Fiat	F.I.A.T.	Bragg	5 1/4	7 1/2
7	Mercedes	E. J. Schroeder	DePalma	5.2	7.06
8	Mercedes	Spencer Wichart	Wishart	5.2	7.06
9	Mercedes	W. H. Bertrand	Clark	5.2	7.06
10	Mercer 35T	Mercer Auto Co.	Hughes	4 3/4	5
11	Knox Six	Ralph K. Mulford	Mulford	4 3/4	5 1/2
12	Lozier Six	Richard H. Knowles	Nelson	4 3/4	5 1/2

## WISCONSIN CHALLENGE TROPHY

Friday, September 20, 1912, at 12 m.  
173.4 miles, or 22 laps

1	Ford	I. C. Hickman	Kulick	3 3/4	4
2	Mason	F. H. Dussenberg	H. Endicott	3 13/16	5
3	Mason	F. H. Dussenberg	Cramer	3 3/8	5
4	Mason	F. H. Dussenberg	Roy Snyder	3 3/8	5
5	E-M-F	Dr. Irving H. Fowle	John Heber	4	4 1/2



Upper—Northeast corner of course before improvement  
Lower—Same curve after the improvements were made





electrics, but to the prevalent type of solid-tired, chain-driven trucks. Many trucks carried full loads, a 5-ton lumber truck being loaded with a large load of lumber; and a truck owned by a cooperage concern being piled high with barrels.

Of the 700 machines in line, fifty-seven were electric. The prevailing type among the gasoline cars was of from 1 to 2 tons capacity, chain-driven, with the motor under the seat, and solid tires. A large contingent, however, were of radically different type, as 115 were shaft-driven, and 201 were of the so-called European type, with the motor under the hood, as in pleasure car practice; this type being prevalent in the very small and the largest classes. One hundred and six of the total number were under 1 ton capacity, a large number of high-wheeled wagons being shown. Very few of the big fellows appeared, but seven 5-tonners and eight of greater than that capacity were entered. Of especial significance is the growth of the left-hand steer idea, fully 25 per cent. of the trucks being so driven. Most of these, however, had the levers on the left side, although a few were noticed with center control, in both right and left hand steer types. Block or sectional tires were not much in evidence, even in the larger sizes, the wide tread dual tires seeming to have the preference. Fully 100 of the machines used pneumatics.

### Toronto Show Sets New Mark

TORONTO, ONT., Sept. 16—What is claimed to be the greatest display of automobile ever shown in the Dominion of Canada was the exhibition in the Transportation Building at the Canadian National Exhibition where more than fifty dealers were exhibiting at least a half million dollars' worth of pleasure and commercial motor cars, including trucks and automobile fire wagons. The applications for space by the various factories and automobile dealers in Canada and several from the States far exceeded accommodations and it was necessary to press into service a tent, 160 by 50 feet, to the west of the Transportation Building to care for the overflow exhibitors.

At the exhibition many new cars never before seen in Canada were on display, some of these being of Canadian design while others were of English, French and American make. Unusually active business was done at the exhibition in the matter of sales, hundreds of thousands of visitors to the Toronto fair having viewed the automobiles, among whom were many buyers.

The exhibition indicates the great automobile business that the Canadian factories and dealers have had during the past year, over 15,000 licenses being granted to owners of machines alone in the province of Ontario. The greatest demand for automobiles came from the vicinity of Toronto. However, the great surprise in the automobile line this past year was Hamilton, Ont., which factories have had great difficulty in keeping up with the constant demand.

## Calendar of Coming Events

### What the Months Ahead Have in Store for the Automobilst—Shows, Conventions, Race Meets, Etc.

#### American and Foreign Fixtures of Importance Set Down in Chronological Order

##### Shows, Conventions, Etc.

- Sept. 14-21.....Chicago, Ill., Annual Fall Festival and Show, Chicago Automobile Trade Association.  
 Sept. 17-20.....Denver, Col., Convention International Association of Fire Engineers.  
 Sept. 23-Oct. 3....New York City, Rubber Show, Grand Central Palace.  
 Sept. 30-Oct. 1....New York City, Sales Managers' Convention, Automobile Board of Trade.  
 Dec. 7-22.....Paris, France, Paris Automobile Show, Grand Palais.  
 Jan. 4-11.....Cleveland, O., Annual Automobile Show.  
 Jan. 11-25.....New York City, Thirteenth Annual Show, Madison Square Garden and Grand Central Palace, Automobile Board of Trade.  
 Jan. 20-25.....Philadelphia, Pa., Annual Automobile Show.  
 Jan. 25-Feb. 1.....Montreal, Que., Automobile Exhibition, R. M. Jaffray, Manager.  
 Jan. 27-Feb. 1.....Detroit, Mich., Annual Automobile Show.  
 Jan. 27-Feb. 1.....Scranton, Pa., Annual Automobile Show, Hugh B. Andrews.  
 Feb. 1-8.....Chicago, Ill., Annual Automobile Show.  
 Feb. 10-15.....Minneapolis, Minn., Annual Automobile Show.  
 Feb. 17-22.....Kansas City, Kan., Annual Automobile Show.  
 Feb. 24-Mar. 1.....Omaha, Neb., Annual Automobile Show.  
 Feb. 24-Mar. 1.....St. Louis, Mo., Annual Automobile Show.  
 March 3-8.....Pittsburgh, Pa., Annual Automobile Show.  
 March 8-15.....Boston, Mass., Annual Automobile Show.  
 March 17-22.....Buffalo, N. Y., Annual Automobile Show.  
 March 19-26.....Boston, Mass., Annual Truck Show.  
 March 24-29.....Indianapolis, Ind., Annual Automobile Show.

##### Race Meets, Runs, Hill Climbs, Etc.

- Sept. 20.....Milwaukee, Wis., Wisconsin Challenge and Pabst Trophy Races.  
 Sept. 21.....Milwaukee, Wis., Vanderbilt Cup Race.  
 Sept. 23.....Milwaukee, Wis., Grand Prize Race.  
 Sept. 29-30.....St. Louis, Mo., Track Races, Universal Exposition Company.  
 Sept. ....Washington, D. C., Reliability Run, Automobile Club of Washington.  
 Oct. 7-20.....Chicago, Ill., Reliability Run, Chicago Motor Club.  
 Oct. 21.....National Tour American Automobile Association.

##### Proposed Contests

- Sept. 21.....Detroit, Mich., Track Races, E. A. Moross.  
 Sept. 21.....Pittsburgh, Pa., Track Races, Michigan State Agricultural Society.  
 Sept. 28.....Indianapolis, Ind., Track Races, E. A. Moross.  
 Sept. 28.....Kalamazoo, Mich., Track Races, Inter-State Fair.  
 Oct. 4-5.....Sioux City, Ia., S. C. Auto Club and Speedway Association.  
 Oct. 4-5-6.....Peoria, Ill., Track Races, J. A. Sloan.  
 Oct. 12.....Springfield, Ill., Illinois State Board of Agriculture.  
 Oct. 12.....Salem, N. H., Track Meet, Rockingham Park.  
 Nov. 6.....Shreveport, La., Track Meet, Shreveport Automobile Club.



How the exhibited cars appeared as lined up during the recent record-making show held in the Transportation Building, Toronto



Vol. XXVII.

Thursday, September 19, 1912

No. 12

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E. M. Corey, Treasurer

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and the Automobile Magazine (monthly), July, 1907.

## To Meet America

ENGLAND has just become generally aware of the fact that there are enough people living in the British Isles and British possessions to support a factory building a car that will sell below or at the \$1,000 mark. Heretofore the English refused to believe it, they were told so very often, but with characteristic obstinacy they still held out. Today they believe it, they believe it because Ford, Overland, Maxwell, Studebaker and several of the other American makers have sold them in large quantities in England, Scotland, Ireland and Wales.

Now that an awakening has arrived it is expected that the question will be taken up with real commendable English tenacity. The motor car movement was at first very slow through the British Isles due to unreasonable road laws, etc., but once the wheels started moving there was a long certain march and today in the high-priced and medium-priced car field the English product out-balances many of the continental productions which were much earlier in the field. England, which banks on its export trade, realizes that Canada, the Argentine, Australia and South Africa are calling for small cars and to hold her export prestige it is essential that she fill the breach and fill it as speedily as possible.

*THE TIME is today opportune for the development of the export field all around the world by the small-priced American builder.*

## Wholesale Financing

LOADING onto the shoulders of one or two healthy units the burden of three or four weaker factories and simultaneously reorganizing the engineering and production methods and utilities, coupled with the problems of financing such an enterprise and carrying out the executive program consequent upon such a unification of factories, proved too stupendous a task for the United States Motor Company, which was placed in receivership a week ago by court order.

The problem of industrial enterprises today is that of securing competent men; the secret of the success underlying some of the biggest individual automobile factories has been one of business executive rather than pioneering in design. Not a few of our factories that have reached the zenith of production success have attained such heights by the calibre of the men who have manned the financing, production and merchandising ends of the business rather than the engineering end. This does not presuppose that a pigmy at the helm of the engineering board would insure success; rather that a medium-calibre engineering department, displaying that good sense of imitating accepted designs and keeping close in touch with public demands, would be more certain of success than an Atlas in command of the engineering forces with secondary financing and production executives.

This is essentially a commercial age; an age characterized by unprecedented demand in the automobile industry; an era of transportation reform in which mental cataclysms with the buyer have been frequent; an age in which ability to deliver has often meant safety and delayed shipments certain destruction; an age in which the ability to quickly make good has been pedestaled by the manufacturers themselves; and an age in which the capacity of a factory has been the measure of its executives to finance the enterprise and the measure of its production and merchandising forces to carry out their part of the program. The concern that could not live up to these stipulations has had to call in the aid of special pilots on many occasions to steer clear of the rocks and shoals.

The entire industry looks to a speedy reorganization of the United States Motor Company, either as a rejuvenated holding company or as a series of reorganized factory units. It will have to be speedy, because of it occurring at the opening of the 1913 manufacturing year, otherwise the wares will be too late on the market and the difficulties of the task will be increased.

What the dynamic results to the industry of this receivership will be cannot at this moment be forecast, but owing to Wall street being so mercilessly bitten it is questionable if the strong movement of banking interests into the manufacture of motor vehicles will not be set back for some time to come. If so, it will be welcomed by some and regretted by others. Talks of enormous combinations of manufacturing units by banking capitalists has been frequent of late; in fact, this seemed the only possible source from which such holding organizations could emanate. The present precipitation will ward off such a situation, which will naturally be welcomed by the small healthy manufacturer, although some of the weaker centers of the industry would naturally be



# Hoosiers Pledge \$330,000 for Stone Road Project

**Indianapolis Automobile Manufacturers Boost Movement by Substantial Contribution—Not Only Car and Accessory Makers Interested in the Work But Also Other Concerns—Great Enthusiasm for Good Roads Found Throughout the Western States Promotes Undertaking**

**B**Y the automobile manufacturers of Indianapolis, Ind., agreeing in one evening last week to subscribe \$330,000 to the project of buying crushed rock for a transcontinental highway from New York to San Francisco, the movement for practical road construction by the automobile industry has advanced one step further into the realm of the practical. The plan of securing from each automobile or accessory manufacturer one-third of 1 per cent. of his gross business for 3 successive years gives promise of becoming feasible. This has been demonstrated by the attitude of Indianapolis and the motor interests of that city have agreed that there is another \$150,000 coming. In the first meeting all but three of the automobile concerns agreed to the proposition and signed the documents. The three not ready to sign are heartily in favor of the movement but due to the holiday season could not close the matter.

The movement in the Hoosier capital has not been confined solely to manufacturers of gasoline machines, electric machines, and accessories. One sporting goods house agreed to give its percentage on the sporting department of its business. Another enterprise with one department only devoted to the automobile trade signed the original document. Many of the dealers were particularly anxious to enter into the proposition and to become one of the many working for practical good roads.

Toward the end of last week the field of activities was centered in Detroit, where the matter was before the consideration of S. D. Waldon, R. D. Chapin, and James Couzens, who are the good roads leaders in the Detroit automobile industry. A meeting is scheduled for the end of this week, when it is expected something definite on Detroit's attitude will be announced. Much of the ultimate success of the movement is dependent on the attitude of Detroit, Cleveland, and Buffalo, and should these three centers act in unity on the proposition there is no doubt that America's first great road across the country will be assured.

Once the manufacturers have subscribed the necessary \$10,000,000 to furnish road-building material, the good roads movement will have injected into it a spirit of the practical that has up to the present been unknown in the good roads field. This action should serve as a precipitation in the entire movement, the value of which will not be confined to one transcontinental highway but to all transcontinental highways and to highways linking the North with the South and others in various parts of the country.

S. D. Waldon, of the Packard company, recently returned from

a 6,000-mile automobile trip in the western states, was wonderfully impressed with the spirit of road improvement in Nevada and Wyoming, in each of which states much practical work has been done during the last year. "There are only 100 miles of what might be designated really bad roads in the transcontinental trip west of Denver," said Mr. Waldon. "There is a 20-mile stretch at Fallon in southwestern Nevada, extending from 16 miles before reaching this village to 4 miles beyond; there is also an 80-mile stretch in the region of Montello. Generally speaking, Nevada has good gravel for road construction, and, while it is 340 miles across the state by the transcontinental trails, there are really but 50 miles of this bad road. These 50 miles are made up of the district at Fallon and a portion of that at Montello, the major part of the Montello stretch being in the state of Utah. Two-thirds of the way across Wyoming it is possible to travel at 30 or 40 miles per hour, although in parts of this state the roads are bad. The mud flats of Utah are very bad and will call for considerable energy. The garagemen along the line of transcontinental highways are already wide awake to the possibilities of developing their business and today there are better garages along the transcontinental routes in these states than along many of the routes of Massachusetts. To those who have not traveled West it is almost impossible to picture the beauties of the landscape, and if the public was aware of the advantages of touring through this section on improved highways there would not be any difficulty in securing the funds for building such a roadway."

Although the original plan of this motor highway was a stone road many manufacturers are already talking in favor of brick or cement. The sentiment is general that a highway of this nature should be free from maintenance costs for at least 10 years, and the only road materials considered in this class would be cement and brick. It is not known exactly what materials of this nature would cost but it is undoubtedly true that both the brick and cement interests would be quick to revise their price schedules when the opportunity for such an enormous national undertaking presented itself.

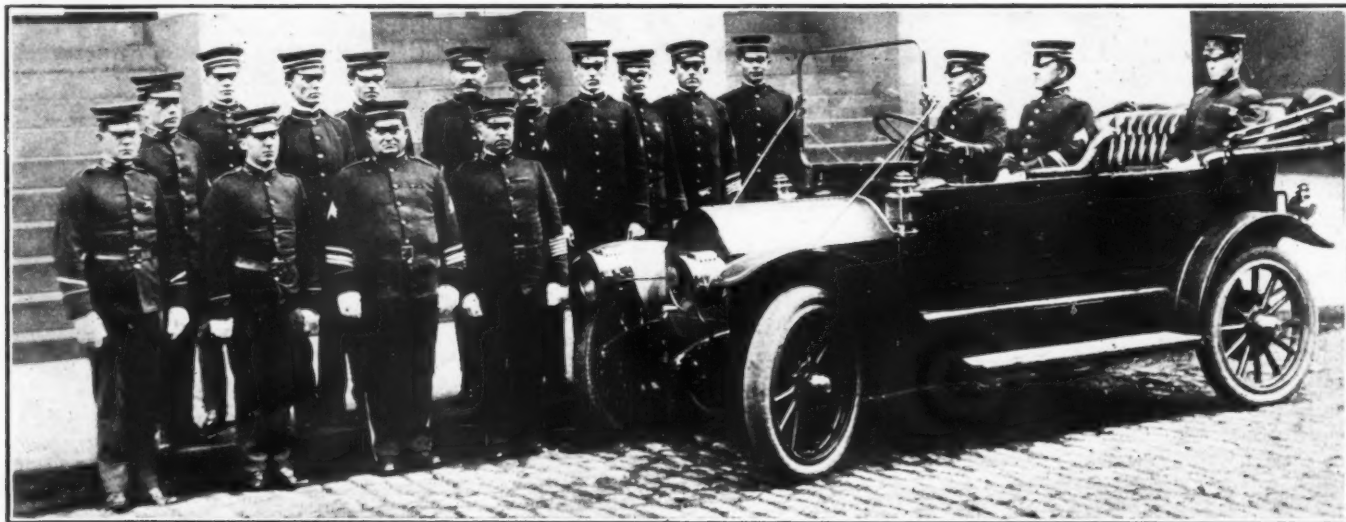
The practical spirit of do-something voiced in this latest road movement has struck a responsive chord practically from one side of the country to the other. This practical aspect of road-building stands out strongly in relief as compared with the oratorical methods so generally used up to the present. The roads movement has gone through a long educational campaign, and everybody is watching for a precipitation of the practical régime. The people owning cars today have a desire to tour over the western states before they are too old to enjoy it, and there is only one way to accomplish this and that is by some precipitation planned such as the present one.

Response to the publication of the first outline of the plans has been received from various communities located along the present lines of transcontinental travel. Without exception, particularly in the western part of the country, every town thinks it has some prime reason for being on the proposed highway and its Chamber of Commerce or Board of Trade has been active in urging that it be not left off the route.

In connection with the main idea, it is now proposed to urge such cities as can not be located on the route to head movements looking to connections with the main artery.

interested in any combination in which they had an opportunity of unloading a non-productive white elephant, as has been the case in the formation of both of the present large holding organizations in the automobile field. The present situation should prove a stimulus to the healthy factories of today, it should impress on them the one great fact that to build up an enormous composite organization calls for men of calibre equal to the task and the securing of such men is the most difficult aspect of the undertaking.

# News of the Week Condensed



Major F. R. Lang, U. S. A., stationed at St. Louis, Mo., who was recently awarded a gold medal by the 50,000-Mile Maxwell Club

**ARMY Officer Gets Maxwell Medal**—Major F. R. Lang, U. S. A., recruiting officer at St. Louis, Mo., has been awarded a gold medal by the 50,000 Mile Maxwell Club for driving a Maxwell car 50,000 miles. The above picture shows his car occupied by him in front of the Old Custom House, St. Louis, Mo.

**Norwalk Distributor for Canada**—The Norwalk Motor Car Company of Toronto, Canada, a branch of the parent company at Martinsville, W. Va., is distributor for the Dominion of Canada.

**Hadley KisselKar Manager**—L. J. Hadley, vehicle division for the Studebaker Corporation of Minnesota, has become manager of the truck sales for the Northwest KisselKar branch, Minneapolis, Minn.

**Wheelock Assistant Manager Pioneer**—A. C. Wheelock has been appointed assistant manager of the Pioneer Automobile Company, San Francisco, Cal., distributors of the Chalmers and Flanders electric.

**Kroha in Milwaukee Truck Firm**—John J. Kroha, formerly contracting freight agent for the Wabash system in Milwaukee, has been appointed Milwaukee representative of the motor truck division of the A. O. Smith Company, of Milwaukee, Wis.

**Montreal's New Traffic Law**—Automobile owners of Montreal, Can., must regard the by-law requiring them to stop 10 feet behind a stationary street car. Should they break it, they must do so only when to do otherwise would jeopardize life.

**Harrison Manager 'Frisco Woods**—J. W. Harrison, formerly connected with the Woods Electric Company in Chicago, has been appointed manager of the Woods electric department of the Pacific Motor Car Company, San Francisco, Cal., distributors of the Woods and the Stevens-Duryea in Northern California.

**Matheson's New 'Frisco Building**—The Matheson Sales Company, San Francisco, Cal., distributors of the Warren and Matheson cars, which heretofore has made its head-

quarters across the bay in Oakland, has now centered all its energies in a handsome new building on Van Ness avenue, near Pine street.

**Richardson Distributor Punctureless Tire**—C. S. Richardson, for several years manager of the Reliance Automobile Company, San Francisco, Cal., distributors of the Knox pleasure cars and trucks and the Detroit Electric in this territory, recently resigned to take over the distribution of Punctureless in California.

**Alberta Automobile Famine**—According to the reports of prominent American motorists who have been touring Canada, there is an automobile famine in Alberta. With the enormous strides that the city of Moncton has been making during the past dozen years it has been found impossible to keep pace with the demand for automobiles.

**Carroll 'Frisco Goodyear Manager**—Frank E. Carroll has been appointed manager of the San Francisco, Cal., branch of the Goodyear Rubber and Tire Company. Carroll has been associated with the sale of Goodyear tires on the Pacific Coast for several years. For some time past he has been manager of city sales in the local branch.

**New Chase District Manager**—Mr. Royal B. Curtiss, who up to September 1 was sales manager of the Royal Equipment Company, resigned his position to accept a district managership of the Chase Motor Truck Company, with headquarters in Cleveland, O. Mr. Curtiss will have jurisdiction over the following territories: Ohio, West Virginia, Kentucky, Indiana (except the vicinity of Chicago), Michigan and Western Pennsylvania.

**Bonnheim-Moore's New Quarters**—The Bonnheim-Moore Motor Car Company, San Francisco, Cal., which has secured the Henderson agency for Northern California, Nevada and Hawaii, has taken handsome quarters in the big Goodyear Tire Building on Van Ness avenue, at the corner of Sutter street, which is apparently to be the new automobile center of San Francisco. Bonnheim is a wealthy California merchant, and Harry G. Moore comes to San Francisco from Chicago, where he was engaged in the automobile business.



## New Agencies Established During the Week

### PLEASURE CARS

Place	Car	Agent
Abbeville, S. C.	Cole	Abbeville Motor Car Co.
Abilene, Texas	Franklin	C. B. Manly
Albany, N. Y.	Fiat	W. M. Whitney Co.
Albany, N. Y.	Maxwell	W. M. Whitney Co.
Albany, N. Y.	Mercer	W. M. Whitney Co.
Amboy, Ill.	Franklin	Andrew Aschenbrenner
Avondale, Colo.	R-C-H	A. E. Smith
Avondale, Pa.	R-C-H	M. F. Morris
Bay City, Mich.	Cole	Wolverine Auto Co.
Boston, Mass.	Adams	B. W. Atwood
Boston, Mass.	Garford	R. & L. Company
Boston, Mass.	Mora	B. W. Atwood
Boston, Mass.	R-C-H	Geo. Grow Auto Co.
Brockton, Mass.	Buick	Buick Motor Car Co.
Butte, Mont.	R-C-H	Montana Auto Service Co.
Canandaigua, N. Y.	R-C-H	Claude O. Hallenbeck
Chicago, Ill.	Nyberg	Kohn W. Hayden
Clinton, Ia.	Cole	Model Auto Co.
Columbus, O.	Cutting	Warren & Southwick Co.
Columbus, O.	Imperial	Warren & Southwick Co.
Columbus, O.	Krit	Cummins Auto Sales Co.
Columbus, O.	Rambler	Glancy & Sells
Columbus, Ga.	R-C-H	S. G. Brannon
Coshocton, O.	Ford	Charles W. Loos & Sons
Coshocton, O.	Overland	Charles W. Loos & Sons
Coshocton, O.	Rambler	Charles W. Loos & Sons
Coshocton, O.	R-C-H	W. E. Layman
Delta, Pa.	Buick	C. F. Ramsay
Delta, Pa.	Ford	C. F. Ramsay
Delta, Pa.	Overland	C. F. Ramsay
Demopolis, Ala.	R-C-H	Leon Morris
Detroit, Mich.	Alco	Thompson Auto Co.
Duluth, Minn.	Cole	Johnson Motor Co.
Erie, Pa.	Cole	Fotter-Burgess Motor Co.
Ft. Wayne, Ind.	Cole	Fred H. McCullough
Galeton, Pa.	R-C-H	H. C. Shaw
Galesburg, Ill.	Cole	Galesburg Machine Works
Galveston, Texas	Cole	John Christenson & Co.
Grand Rapids, Mich.	Cole	Cowdin & Woodland
Hamilton, Ohio	Cole	F. H. Graf Motor Car Co.
Havana, Cuba	Alco	Villamil & Miller
Kansas City, Mo.	Alco	William Motor Car Co.
Kensington, Minn.	R-C-H	Oslerberg & Colmark
LaPorte, Ind.	R-C-H	Indiana Auto & Supply Co.
Larimore, N. D.	R-C-H	Larimore Auto Co.
Lima, Ohio	Cole	Thomas Motor Car Co.
Longmont, Colo.	R-C-H	Timmons Auto Co.
Low Point, Ill.	Cole	Banta Bros.
Lynn Center, Ill.	R-C-H	A. F. Anderson
Manistee, Mich.	Cole	National Garage & Sales Co.
Memphis, Tenn.	Cole	Jerome P. Parker-Harris Co.
Mendota, Ill.	R-C-H	P. F. Sondergroth
Meridian, Miss.	R-C-H	A. Y. Harvey
Milwaukee, Wis.	Marion	Edgar F. Sanger Co.
Milwaukee, Wis.	Moline	Moline Garage Co.
Milwaukee, Wis.	Paige	R. D. Rockstead
Milwaukee, Wis.	Stearns-Knight	Edgar F. Sanger Co.
Milwaukee, Wis.	Warren	R. D. Rockstead

Place	Car	Agent
Minneapolis, Minn.	Alco	Downs Co.
Monticello, Minn.	R-C-H	Henry Cain
Myersdale, Pa.	Cole	Myersdale-Overland Co.
Newburg, N. Y.	R-C-H	Mogul Auto Co.
Oakland, Cal.	Cole	J. C. Lewis Motor Co.
Odessa, Russia	Velie	Jacques Brodsky
Ottawa, Ill.	Cole	Ottawa Garage Co.
Ottawa, Ill.	R-C-H	Standard Garage
Pawtucket, R. I.	Cole	H. W. Bowen
Portland, Ore.	Cole	Neate & McCarthy
Railroad, Pa.	Overland	H. Schroeder
Reading, Pa.	Alco	Merchants Auto Service Co.
Remington, Va.	R-C-H	Remington Motor Car Co.
Rochester, N. Y.	Alco	Pawlik & McGuidwin
Rockyford, Colo.	R-C-H	Lewis Bros. & Johnson Co.
San Antonio, Tex.	Cole	Guarantee Motor Car Co.
Savannah, Ga.	Cole	J. C. Lewis Motor Co.
Sheboygan, Wis.	Cadillac	Sheboygan Auto & Supply Co.
Sheboygan, Wis.	Detroit	Rummele Garage Co.
St. Cloud, Minn.	R-C-H	Geo. E. Gulde
St. Johnsville, N. Y.	Cole	B. & C. Auto Co.
St. Louis, Mo.	Glide	Bond Automobile Co.
Stevens Point, Wis.	Apperson	P. F. Koshollek
Stevens Point, Wis.	Reo	P. F. Koshollek
Stewartstown, Pa.	Buick	August Neller
Stewartstown, Pa.	Ford	August Neller
Stewartstown, Pa.	Overland	August Neller
Syracuse, N. Y.	Alco	Jefferson Garage Co.
Syracuse, N. Y.	Kissel-Kar	George Finck
Syracuse, N. Y.	White	George Finck
Toledo, O.	Cole	Bunnell Auto Sales Co.
Urbana, O.	Cole	Prince Motor Car Co.
Utica, N. Y.	Imore	I. R. Gardiner
Utica, N. Y.	Krebb	I. R. Gardiner
Utica, N. Y.	Lozier	Westcott Garage Co.
Vancouver, N. C.	Cole	B. C. Automobile Co., Ltd.
Visalia, Cal.	R-C-H	Jas. L. Robertson
Washington, D. C.	Penn	Lippard-Stewart
Washington, D. C.	Speedwell	A. D. Loffler Co.
Waterloo, Ia.	Cole	Burd Auto & Supply Co.
Webb City, Mo.	R-C-H	C. H. Beck
Whittier, Cal.	P-C-H	H. L. Triplett
York, Pa.	Apperson	South Pennsylvania Auto Co.

### ELECTRIC CARS

Lancaster, Pa.	Hupp-Yeats	H. M. Vondersmith
St. Louis, Mo.	Hupp-Yeats	R. C. Jones

### COMMERCIAL CARS

Baltimore, Md.	Veerac	Norwood Bros., Inc.
Boston, Mass.	Detroit	Anderson Mfg. Co.
Boston, Mass.	Little	Tyler Motor Car Co.
Boston, Mass.	Westfield	Westfield Motor Truck Co.
Melbourne, Australia	Federal	American Motor Truck Co.
Portsmouth, O.	Federal	David Stahler
St. Louis, Mo.	Federal	Allen Baker
Vancouver Isle, B. C.	Federal	Vancouver Isle Motor Co.

**Autocar School Reopens**—The motor school which was opened last fall by the Boston, Mass., branch of the Autocar Company, has been reopened again this season and already a large number of drivers have been enrolled. A special representative of the factory is coming to Boston to take charge of it this year.

**Richardson Handling Cleveland Cole**—F. E. Richardson has withdrawn from the firm of Richardson-Neighbors Motor Company, Cleveland, O., distributors for the Cole and Hupmobile. He has organized the Richardson Motor Car Company and will be located next door to the old company. Mr. Richardson will handle the Cole lines exclusively, while Mr. Neighbors will look after the Hupmobile interests.

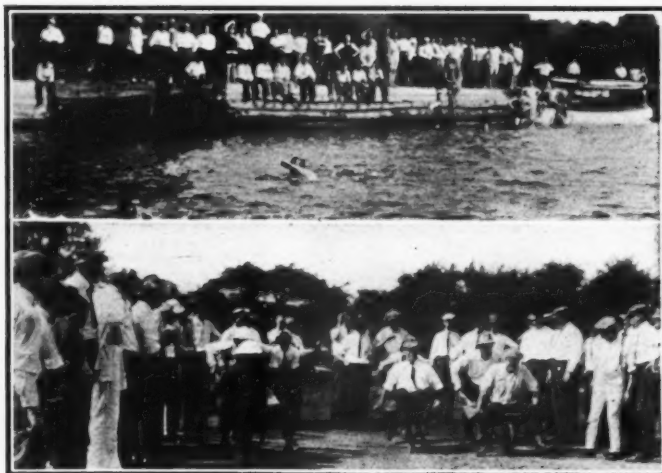
**Baker Line Together**—The Baker commercial and pleasure vehicles are now being handled under the same roof in Boston, though by distinct agencies, A. F. Neale, who has the pleasure cars, and Frank A. Phelps, who handles the commercial line, having moved their quarters to the former salesrooms of the King agency, corner of Boylston and Fairfield streets.

**Lehigh Adopts Automobile Handcars**—The adoption of motor cars for track work in place of the old-fashioned manpower handcars has been decided upon by the management of the Lehigh Valley Railroad. Forty-seven of the new cars, the first installment, have been ordered, and the substitution of gasoline for muscle for transporting repair men and tools over the line will eventually be applied to the whole Lehigh Valley system.

**Readjustment of U. S. Motors in Columbus**—A readjustment of the sales force of the United Motors-Columbus Company, Columbus, O., in a large portion of Ohio, Kentucky and West Virginia has been made. F. P. Corbett, who has been in charge of the Columbus distributing point for some time, will be district manager of the three States. The local agency in Columbus will be signed up soon. The wholesale and retail end of the business will continue in the same location, 246-248 North Fourth street. Manager Corbett is now busy signing up sub-agents in his territory.



New building of the Overland Automobile Company of Dallas, Tex.



Swimming and wheelbarrow races at the recent outing of the New York City Big Village Motor Boosters

**Miller Atlanta Branch Store**—The Chas. E. Miller Supply House, Atlanta, Ga., will move its branch store to 259 Peach-tree street.

**Motor Bus Line in Bay State**—A motor bus line has been started between Pittsfield, Mass., and Troy, N. Y., and the volume of patronage has been very good since the line was started.

**Meiser with Knipper-Kipp**—John Meiser, superintendent of the Selden Motor Car Company, Rochester, N. Y., has resigned to become connected with the Knipper-Kipp Company in the Kondolf Garage, Monroe avenue.

**Manager Sackett Resigns**—Louis Sackett, recently appointed manager of the Boston, Mass., branch of the Oakland, has resigned and the branch is being conducted now by Fred Walsh, sales manager of the branch for some years.

**Stearns Philadelphia Branch House**—The F. B. Stearns Company, Cleveland, O., has opened a branch house in Philadelphia, Pa., located at 449-451 North Broad street. Mr. G. Hilton Gantert is manager, with Mr. Evans Church as sales manager.

**New Service Station Manager**—Walter Jones, for some years manager of the Whitten-Gilmore Company's service station, Boston, Mass., agents for Chalmers cars, has resigned, and Mason H. Kimball has been appointed to succeed him.

**Morgan Severs Truck Connections**—Ralph L. Morgan of Worcester, Mass., has severed his connections with the Morgan Motor Truck Company, Worcester, Mass. He has taken a suite of offices in the People's Bank Building, 452 Main street, Worcester, Mass.

**Automobile Funeral Procession in District of Columbia**—The first funeral procession composed exclusively of motor cars ever held in the District of Columbia was that of Paul Peck, the aviator, who was killed by a fall from his biplane in Chicago, Ill., September 11.

**Mantell with Michigan Company**—C. S. Mantell, formerly manager of the Portland Motor Car Company, Portland, Ore., has recently taken charge of the sales department of the Michigan Motors Company of Portland, handling the Havers Six as well as Lippard-Stewart trucks.

**Stearns' New Trade Mark**—The F. B. Stearns Company, Cleveland, O., has just copyrighted a new trade mark. It is a 3-inch metal figure of a knight fastened to the radiator of all Stearns-Knight cars, with the wording "Stearns-Knight" on the pedestal on which the knight stands.

**Hauger 'Frisco Haynes Manager**—Fred W. Hauger, for several years assistant manager of the Haynes Automobile Sales Company of San Francisco, Cal., has been named as

manager of the Oakland branch of the Haynes. C. H. Haynes, a brother of Ellwood Haynes, has been appointed treasurer under the reorganization.

**New Poppenberg Buffalo Home**—Plans have been completed for the construction of the new home for the Poppenberg Motor Car Company at Main and Carlton streets, Buffalo, N. Y. The mansion on the site at present is being razed for the new structure, which will be seven stories in height and will extend from Main to Washington streets.

**Lawrenceburg Automobile Club Organized**—The Lawrenceburg Automobile Club has been organized at Lawrenceburg, Ind., with twenty-seven members, the officers being: President, John W. Oberting; vice-president, Robert E. Oberting, and secretary-treasurer, Edmund Bauer. An effort is being made to enlist every motor car owner in Dearborn County in the organization.

**Watertown's Club Road Experiments**—The Watertown Wis., Motor Club, organized three months ago with seventy-five members, has completed a sample stretch of road, the principal value of which is to illustrate the small cost of maintaining ordinary highways when proper methods are used. A stretch of 1 mile of dirt road between the western city limits and the village of Ixonia has been scraped, the stones removed and a split log drag applied after even the lightest shower and is today one of the finest pieces of highway in Wisconsin. The expense has been approximately \$60 for three months' work.



## Automobile Incorporations

### AUTOMOBILES AND PARTS

ATLANTIC CITY, N. J.—Pierson-Harris Company; capital, \$50,000; to manufacture automobiles. Incorporators: Gilbert Pierson, Edward G. Harris.

BUFFALO, N. Y.—Niagara Devices Company; capital, \$100,000; to manufacture transmission for automobiles, machines, devices and patented articles of all descriptions. Incorporators: Edward D. Matteson, George A. Cotton, George R. Volkmar.

### GARAGES AND ACCESSORIES

ALBANY, N. Y.—Rondout Rubber Company; capital, \$1,000,000; to deal in crude and reclaimed rubber. Incorporators: Calvin Tomkins, Harry C. Clews, Frederick E. Townley, William A. Bishop.

BROOKLYN, N. Y.—O.-C. Storage Battery Company; capital, \$2,000; to manufacture storage batteries. Incorporators: Albert M. Friedenbergh, Robert W. Vicarey, Leopold Friedenbergh.

BROOKLYN, N. Y.—Brooklyn Terminal Garage and Machine Company; capital, \$10,000; to carry on a garage business. Incorporators: Donald B. Abbott, Charles E. McMahon, Joseph D. Fackenthal.

BROOKLYN, N. Y.—Haas Garage Company; capital, \$2,000; to carry on a garage business. Incorporators: Louis Haas, Emma Haas, Oscar Hauman. Buffalo, N. Y.—Continental Motor Company; capital, \$100,000; to deal in motors. Incorporators: Gordon F. Matthews, Frank V. Wayland, Allen E. Choate, Walter Schmieding, Reverdy L. Hurd.

CINCINNATI, O.—Bond Hill Auto Service Company; capital, \$20,000; to operate a freight and passenger service. Incorporators: Jacob Cios, John F. Ahlers, Joseph B. Arlinghaus, Arthur H. Pohlman, W. A. Earle.

CINCINNATI, O.—Cincinnati Automobile Club Company; capital, \$25,000; to operate a social club for the purpose of advancing the interests of motorists generally. Incorporators: D. McKim Cook, Louis J. Merkel, Gustav W. Drach, A. O. Streitman, Charles W. Ireland, L. S. Coltor.

CINCINNATI, O.—Ideal Steel Wheel Company; capital, \$500,000; to manufacture steel automobile wheels and automobile accessories. Incorporators: J. B. Fitch, J. E. Strietmeier, E. H. Maffrey, B. L. Mattox.

CLEVELAND, O.—Auto Electric Appliance Company; capital, \$20,000; to manufacture electric automobile appliances. Incorporators: Paul T. Crampton, Charles R. Brown, Guy W. House, Frank B. Fults, Henrietta Davis.

CLEVELAND, O.—Northern Ohio Automobile Company; capital, \$10,000; to conduct all kinds of races of motor-driven vehicles. Incorporators: Richard H. Lee, Florence Gawood, John A. Alburn, H. E. Weffler, Fred Hockley.

DAVENPORT, IA.—Overland Motor Car Company; capital \$10,000; to deal in motor cars. Incorporators: G. H. Knowles, Henry Bierkamp, Henry Meyer, J. G. Foy.

GRAFTON, W. VA.—Grafton Motor Company; capital, \$5,000; to repair and store automobiles, deal and hire same, etc. Incorporators: Henry J. Prachi, H. D. Comerford, J. Howard Reynolds, A. R. Huns, D. C. Peck.

GRAND RAPIDS, MICH.—Hand Corporation; capital, \$30,000; to manufacture and sell automobile and garage accessories. Incorporators: O. H. L. Wernicke, H. C. Cornelius, George H. Hand, J. A. Whitworth, L. A. Cornelius, George G. Whitworth.

INDIANAPOLIS, IND.—Showalter Manufacturing Company; capital, \$10,000; to manufacture motor car bodies. Incorporators: E. W. Showalter, William Small, H. G. Showalter.

KINGSTON, N. Y.—Taxicab Transportation Company; capital, \$5,000; to carry on a taxicab transportation business. Incorporators: Wm. Hiltbrant, Elizabeth K. Hiltbrant, Elsa Hiltbrant.

MILWAUKEE, WIS.—New York Tire & Vulcanizing Company; capital, \$10,000; to manufacture an inner liner for casings. Incorporators: Vivian Brownell, Bertrand Brownell.



**Westfield Truck Branch**—The Westfield Motor Truck Company, of Westfield, Mass., has opened a factory branch at Boston at 287-293 Northampton street with George L. Cooke in charge as manager.

**Russell Company's New Quarters**—The W. L. Russell Company, agents for the Haynes in Boston, Mass., and the Regal wholesale and retail for New England, has moved to the Motor Mart, still retaining the retail branch at 10 Park square.

**Garford Now in Boston**—The final arrangements were completed last week whereby the R. & L. Company, of New York, comprising J. T. and J. A. Rainier and Paul Lineberger, took control of the Garford business in Boston to operate in connection with the New York agency as a sub-branch.

**New Company Formed**—The Tyler Motor Car Company, Boston, Mass., formed by Frank J. Tyler and his brother, Lucius, has secured quarters in the Motor Mart and have taken on the Little Four roadster. The new company is making investigations of other propositions and will handle other cars and trucks.

**Changed to a Branch**—The Detroit Electric, formerly handled as an agency proposition by James A. Binney in Boston, has been changed over to a branch by the Anderson Electric Company, of Detroit, and Albert Weatherby has been sent to Boston as manager. A new service station has



Zimmerman and Brewer, old-time cyclists, renew ancient rivalry at the Big Village Motor Boosters Outing

been opened at 25 Irvington street with Nicholas Romme-fauger in charge. Mr. Binney has gone into the gasoline field, having taken on the Henderson.

**Iowa Has 38,924 Automobiles**—According to the latest reports from the office of the Secretary of State, there are now 38,924 automobiles in Iowa. There are 1,480 dealers and 3,890 motorcycle owners registered. During the present year up to August 31, \$45,657.81 has been paid into the State Treasury for automobile registrations; \$14,851.29 was paid in August.

**Ohio Has 60,500 Automobiles**—According to the latest report of State Registrar of Automobiles J. A. Shearer, Ohio now has 60,500 registered automobiles of all kinds. This number is far in excess of the total registered in 1911, and applications for registration are coming in at the rate of 60 per day. It is believed the number will exceed 70,000 before the year ends.

**Wisconsin's Registration Large**—The rank and wealth of Wisconsin as a motoring state is indicated by a compilation of statistics by A. J. Cobban, in charge of the motor registry and license department of the secretary of state's office at Madison. During the period from January 1 to July 1, 1912, there were licensed 23,505 motor cars and 3,816 motorcycles, a total of 27,321, or one motor vehicle to every eighty-five persons resident in Wisconsin, according to the given population of 2,333,860.

**District of Columbia's 1912 Registration**—The annual report of H. M. Woodward, permit clerk, reveals the fact that permits to operate motor cars in the District of Columbia were issued to 2,343 out of 2,393 applicants who were examined by the motor car board during the fiscal year that ended June 30 last. Of the permits granted 200 were for the operation of electric vehicles, 1,790 for gasoline machines, 22 for steam cars and 331 for motorcycles. The revenue derived amounted to \$6,022. There were registered and paid for during the year 3,924 metal identification tags, which produced a revenue of \$7,848. Two permits were revoked during the year because of charges filed and upon recommendation of Major Sylvester, superintendent of police.

**California's Registration Increases 50 Per Cent.**—California took delivery on 34,110 automobiles during the fiscal year, which closed August 31. These figures are issued by the Secretary of State, as the number of motor cars registered during the 12 months period, and places California near the top of the list. That the automobile industry is growing by leaps and bounds is attested by the fact that during the 1910-11 season but 15,905 machines were registered at Sacramento, giving the season just closed an increase of 8,205 cars. This is greatly in excess of 50 per cent. of the former total and represents the actual gain in a single year. Of all the makes of motor cars, the Studebaker 20 and 30 proved the most popular, 3,653 cars of these makes being registered. Next in point of popularity came the Ford with 3,453.

## Automobile Incorporations

MONTREAL, QUE.—Belleville Garage & Auto Company, Ltd.; capital, \$90,000; to deal in motor cars, commercial trucks and doing a general repair business.

NASHVILLE, TENN.—Cumberland Motor Company; capital, \$10,000; to deal in motors. Incorporators: W. D. Caldwell, J. H. Cheek, J. O. Cheek, Jr., D. M. Baver.

NEW YORK CITY, N. Y.—Simplex Carburetor Company; capital, \$150,000; to manufacture carburetors. Incorporators: Albert L. Kull, Col. Cord Upton, Simon J. Mayer, Milton Mayer, John J. Welch.

NEW YORK CITY, N. Y.—Englebert Tyre Company; capital, \$100,000; to deal in automobiles and other tires. Incorporators: Samuel K. Kellock, Clarence B. Campbell, Edward W. Elverson.

NEW YORK CITY, N. Y.—Zilio Sales Company; capital, \$5,000; to deal in automobiles and accessories. Incorporators: Edward Moyse, Felix H. Moyse, Isaac J. Phelps.

NEW YORK CITY, N. Y.—Imperial Auto Renting Company; capital, \$1,000; to carry on an automobile renting business. Incorporators: Abraham S. Gusson, David Abraham, Alexander Miller.

NEW YORK CITY, N. Y.—Knickerbocker Havers Company; capital, \$50,000; to deal in automobiles and motor vehicles. Incorporators: Erastus M. Cravath, Albert C. Hubbel, Burwell M. Crosthwaite.

NEW YORK CITY, N. Y.—Ames Automatic Shock Absorber Company; capital, \$25,000; to manufacture shock absorbers. Incorporators: Louis E. Bomeisler, George H. Edwards, George Isaksen.

NEW YORK CITY, N. Y.—Commercial Delivery Company; capital, \$500; to deal in automobile delivery cars, trucks, etc. Incorporators: Abraham Miller, Nathan Tarakan, Louis Tarakan.

ROCHESTER, N. Y.—Automobile Safety Fender Company; capital, \$100,000; to manufacture automobile fenders. Incorporators: William A. Snyder, Abram Dewolf.

ST. JOSEPH, MICH.—Wizard Manufacturing Company; capital, \$10,000; to manufacture and sell improved carburetors, and motor vehicle accessories. Incorporators: Frank A. Sharpneck, Thomas Robinson, Gerald C. McDowell.

TOLEDO, O.—Landman-Griffith Company; capital, \$10,000; to deal in and repair automobiles of all kinds and handle parts and accessories. Incorporators: Charles P. Landman, Charles K. Friedman, Warren E. Griffith, Hattie Landman, Gertrude D. Griffith.

TOLEDO, O.—Rapp Manufacturing Company; capital, \$15,000; to manufacture spark plug and automobile accessories. Incorporators: Fred Hummel, Clifford Stone.

WELLSBURG, W. VA.—Brooke Auto Company; capital, \$10,000; to deal in automobiles. Incorporators: J. H. Scott, W. H. Scott, C. M. Magee, F. A. Chapman, E. A. Fegan.

WILMINGTON, DEL.—L-A-W Motor Truck Company; capital, \$200,000; to engage in automobile truck business. Incorporator: G. G. Rheubym.

WILMINGTON, DEL.—Auto Service & Supply Company; capital, \$15,000; to engage in automobile and accessory business. Incorporator: F. A. Webb.

### CHANGES OF CAPITAL

BUFFALO, N. Y.—United Motor Buffalo Company; change of name to Montoe Motor Car Company.

DETROIT, MICH.—Ignition Starter Company; increase of capital to \$500,000.

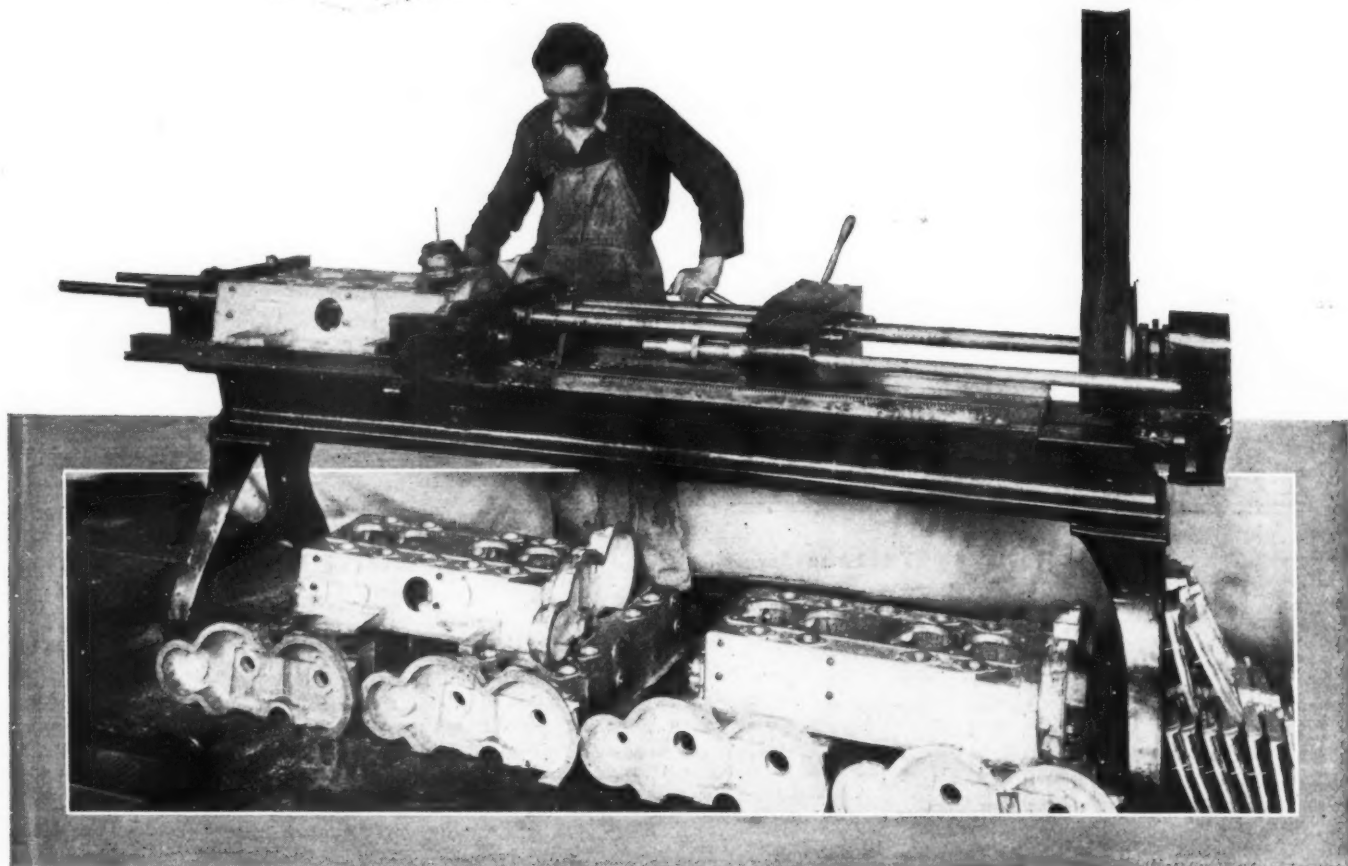
HOUSTON, TEXAS.—Stafford Illuminated Automobile Lamp and Number Company; increase of capital from \$25,000 to \$50,000.

INDIANAPOLIS, IND.—Marion Motor Car Company; increase of capital from \$1,125,000 to \$1,250,000.

PROVIDENCE, R. I.—A. W. Harris Oil Company; capital, \$7,500; to succeed A. W. Harris Oil Company. Incorporators: Benjamin S. Terry, Arthur D. Greene, George F. Heywood.

MIDDLETOWN, O.—Middletown Buggy Company; change of name to Crescent Motor Truck Company; to manufacture motor trucks in the future.

# Factory Miscellany



Camshaft boring machine made by the National Motor Vehicle Company for use in its factory at Indianapolis, Ind.

The object of this machine is to save time. It requires the attention of one man and can completely bore a crankcase and prepare it for the camshaft bearings in 30 minutes. It can work steadily at this rate for a working day, turning out twenty finished jobs in that time. The machine is so designed that the axis lines up with the axis of the crank shaft, thus securing parallelity between the latter and the crankshaft. The machine has a guide which passes through the center of the crankcase through the main bearings, that is, following the line of the crankshaft. The National motor,

being of the T-head type, requires a set of camshaft bearings on each side of the crankcase. At the end of the machine carrying the driving gear train there is a wheel on either side of the main drive wheel. These two side wheels run at the same speed and each one carries a cutter allowing the boring on both sides of the crankcase to be carried on simultaneously. The former practice of boring both sides separately required practically double the time, while the parallelity of the shafts was not so well assured.

**L IPPARD-STEWART Assembly Room**—In the accompanying illustration is shown a part of the assembly room of the Lippard-Stewart Motor Car Company, Buffalo, N. Y., makers of light commercial cars. The entire factory is roomy, light and as well adapted to the work as is the section shown.

**Battery Concern in Canada**—The Hart Accumulator Company, of London, England, manufacturers of storage batteries, will establish a factory in western Canada. E. J. Clark, managing director of the company, who is one of the manufacturers touring the country, will recommend that a large plant be built at either Winnipeg or Fort William.

**Ford's Memphis Assembling Plant**—Contracts have been let for the erection of the assembling plant of the Ford Motor Company, Detroit, Mich., at Memphis, Tenn., and work will be commenced at once. The site is a triangular lot with 114 feet frontage. The entire plant when completed will represent an investment of \$200,000.

**Overland's Two-Story Addition**—The list of contemplated additions to the Willys-Overland factory, Toledo, O., was increased Tuesday, when work was started on a two-story factory building to be used as an addition to the present plant. The addition will be 40 by 60 by 39 feet and will cost \$8,000. The additions now planned for this mammoth concern will cost several hundred thousand dollars and work is being pushed as rapidly as possible so that the buildings may be completed before the arrival of winter. Four of the largest buildings are being made considerably larger. Additions are being made to the final assembling room, the main factory building, the forging plant, the shipping rooms and the railroad docks. Railroad docks of this plant will be more than doubled in size and will be uniquely commodious and modern when completed. At present but three cars can be loaded in a day and as 200 cars are shipped each day the space required as railroad dockage is enormous. This improvement alone will cost an immense sum. The two new buildings, one to be occupied by the Overland proper, the



other by the Kinsey Manufacturing Company, must be completed under the terms of the contract by November 1, which means some rapid building.

**Republican Company's Flint Plant**—The Republican Motor Company, Flint, Mich., contemplates erecting a \$1,000,000 automobile plant at Flint.

**Oakland's Factory Addition**—The Oakland Motor Car Company, Pontiac, Mich., contemplates the erection of a large addition to its present plant at Pontiac to cost about \$100,000.

**Miller Company's New Building**—The Miller Rubber Company, Akron, O., is erecting a new building at a cost of \$5,000. It will be of steel construction and will be used as a mixing department.

**Federal 1913 Output Large**—The Federal Motor Truck Company, Detroit, Mich., will have a large output, according to the way rush and repeat orders are coming in. The output for 1913 has been raised to 2,500 cars.

**Keeton Installing Machinery**—The Keeton Motor Car Company, Detroit, Mich., is installing machinery at the Wyandotte plant, Wyandotte, Wis., and will start manufacturing this month and will give deliveries in October.

**Gramm-Bernstein's New Plant**—The new Gramm-Bernstein Company, Lima, O., started the manufacture and assembling of motor trucks in the new factory. B. A. Gramm stated that 250 motor trucks will be turned out by the plant within the next six months.

**Remy's Large Contracts**—The largest orders ever obtained by one factory for magnetos was recently enacted by the Remy Electric Company, Anderson, Ind., with the Willys-Overland Company, Toledo, O., and the Buick Motor Company, Flint, Mich., for a total of 70,000 magnetos.

**Rauch & Lang's Factory Addition**—Rauch & Lang, builders of motor vehicles, are to build an addition to their factory, West Twenty-fifth street, to be four stories high. It will be 100 feet by 112 feet in size and made of brick with a concrete roof. George S. Rider & Company is drawing the plans.

**Velie's Repair and Test Building**—The Velie Motor Vehicle Company, Moline, Ill., is to erect a \$15,000 road repair and test building. The new building, which will be erected south of the present shop, will be 80 feet by 200 feet in size. The contract has been let to Henry W. Horst, of Rock Island, Ill.

**McLaughlin to Build Addition**—The McLaughlin Carriage Company, Oshawa, Ont., has taken out a permit to build an addition to their factory, two stories high and 250 feet by 60 feet in size. Their present manufacturing facilities are inadequate to meet the increasing demand for McLaughlin Blick motors.

**Visit Jeffery Plant**—Fifty members of the Western Society of Engineers, Chicago, Ill., visited the Rambler factory recently and made a close inspection of the unit gasoline and electric motor with which the 1913 Cross Country is equipped. The engineers came to Kenosha, Ind., as the guests of the Thomas B. Jeffery Company.

**Project Factory for Trucks**—Phillip S. Longest, president of Longest Brothers, Louisville, Ky., announces that C. G. Stoddard and H. J. Edwards, of Long Island, N. Y., are negotiating with him for the expansion of his place into a factory for the manufacture of commercial cars. It is their desire to lease the place from the Longest Brothers.

**Pierce Company's Machine Shop**—The Pierce Motor Company, of Racine, Wis., the motor car division of the J. I. Case Threshing Machine Company and manufacturing Case cars, is building a new machine shop and assembling building, four stories high, 130 feet by 80 feet in size. The new building is situated between the present motor car

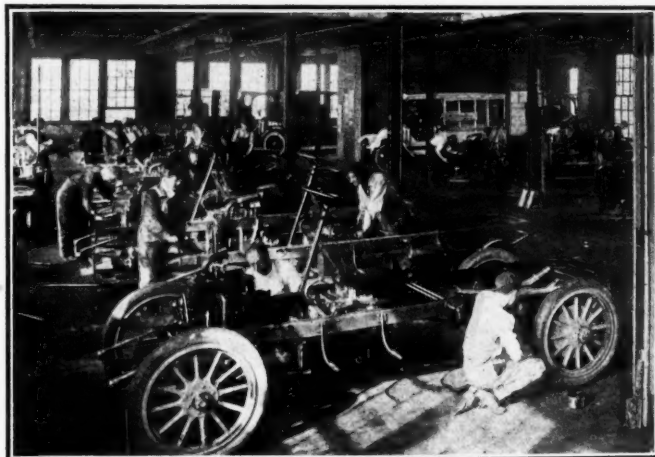
works and the \$1,000,000 foundry plant now under construction for the Case company at Lakeside, Racine.

**Flames Sweep Martinsburg Plant**—The Stewart Vehicle Works of Martinsburg, W. Va., employing 400 men, was completely destroyed by fire recently, entailing a loss of more than \$150,000. The plant had been in operation less than a year and practically all of their stock, including hundreds of vehicles, were destroyed. A providential fall of rain prevented the destruction of the Norwalk Motor Company and hundreds of thousands of dollars worth of the best property in that city.

**Pharis Tire Company Busy**—The Pharis Tire & Rubber Company, of Columbus, O., recently incorporated, has been organized by the election of A. R. Lindorf, president; R. W. Pharis, secretary and treasurer, and Carl Pharis, general manager. The concern, which took over the plant of the Newark Tire & Rubber Company, of Newark, O., recently decided to keep the plant at that point. Additional machinery will be installed, including grinding apparatus. The capacity of the plant now is fifty tires daily, which will be doubled in the near future. In addition to making what is known as the Pharis tire, the company will make a 4,000 miles guaranteed tire called the Packard.

**Krit's New Service Building**—The Krit Motor Car Company, of Detroit, Mich., is erecting a new service building adjacent to its factory on the East Boulevard. This addition is to be used as a service stockroom and there will also be a showroom in connection. The construction is of brick, one story high, all sides are to be filled with Fenestra sash, giving a very light and airy storeroom. The roof is of the saw tooth construction, liberally fitted with glass. The building is 85 feet wide by 125 feet long of which 85 by 15 will be used for a showroom. In the center of the front is a large plate glass window in which will be shown the latest Krit models. It is expected that this addition will enable the Krit company to materially better its service department and enable repair parts to be shipped without delaying production of current models.

**Further Extensions of Goodrich Plant**—The extreme popularity of Goodrich tires has caused an era of factory expansion at the already extensive plant of the B. F. Goodrich Company, Akron, O. Although by far the largest rubber factory in the world, several more acres of floor-space will be added by the time the snow flies. Work is already begun on a six-story office building which, with a two-story addition to the present quarters, it is hoped will be adequate for handling the rapidly growing business interests of the concern. The structure will be of steel and concrete, faced with brick and finished in the most modern style. A new factory building, also six stories high, is rapidly nearing completion. This big addition is 270 feet long by 157 feet wide and contains 6 1-2 acres of floor-space.



Assembly room of the Lippard-Stuart Motor Car Company, Buffalo, N. Y.



## Spark Plug With Double Connection; New Rear View Mirror; Heavy Duty Spark Plug; Device to Reduce Cylinder Compression; Punctureproof Automobile Tire; Gasoline Filter

### Superior Double Spark-Plug

TESTS have shown, according to the Superior Motor Specialty Company, Philadelphia, Pa., that the use of two sparks on a single plug in a cylinder results in a considerable increase in fuel efficiency. The production of two simultaneous sparks furnishes more heat at the critical moment when the mixture is ignited, so that the process of combustion is started more rapidly and more dynamically. The plug, Fig. 1, consists of two positive electrodes contained in a double insulation, which may be wired either both to the magneto, or one to the magneto and the other to the battery, utilizing either a double or a dual ignition system. The timing of the ignition naturally is not disturbed or influenced in any way by the use of this plug. It is claimed by the maker that the increase in horsepower obtained by the use of this plug over the power output with a single-spark plug is 17 per cent.

### Hoco Rear View Mirror

Hoeft & Company, Inc., Chicago, have designed a new type of rear view mirror, Fig. 2. The mirror itself consists of a beveled, oval-shaped plate, 6 by 8 inches, which is held in a brass frame mounted on a horizontal rod. The latter slides in a metal sleeve and is adjustable at any point along the length of the same, its maximum extension being 13 1-4 inches. The sleeve is attached to the windshield post by a clamp being held together by two bolts or by a screw plate. The mirror comes in nickel or brass finish. The device is of exceptional value in that it can not only be swung at any angle but may be given a longer arm at any time by simply loosening the connection and pulling out the slide.

In insurance statements it has been shown that a large percentage of the number of accidents from careless driving, have been caused by the driver turning to look at a car behind.

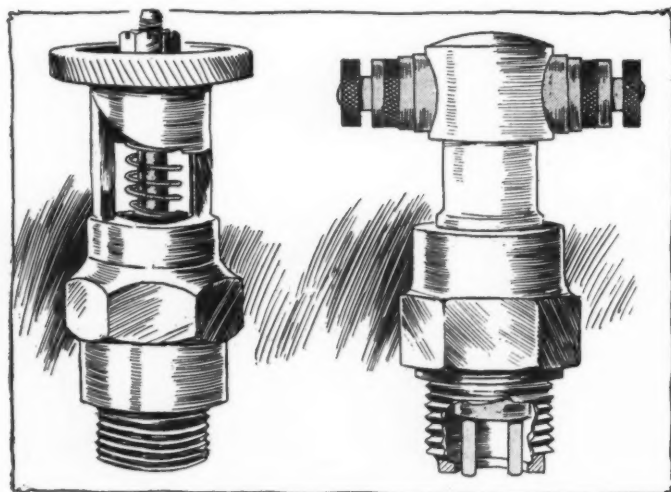


Fig. 1—Endrick motor decompressor and Superior double spark-plug

### Hartford Heavy-Duty Plug

A spark-plug which is designed to withstand high heat and its accompanying influences is the Hartford plug, Fig. 3, made by the Hartford Suspension Company, Jersey City, N. J. This plug is so constructed that it may be easily cleaned, this feature being obtained by making the insulation practically in one piece with the bushing and nut, while the second piece of the plug is the shell. The nut may be easily screwed out of and withdrawn from the shell so as to permit of cleaning the electrodes from soot and oil deposits, which are the most frequent causes

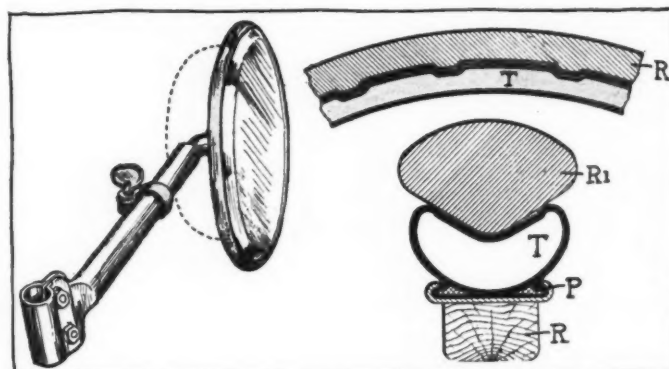


Fig. 2—Hoco rear view mirror and section of Montgomery tire

of trouble in the case of plugs capable of withstanding the pressure of a high-tension current. The illustration shows the plug in its two portions and attention is called to the peculiar construction of the negative electrode, which is formed as a long U-pin inserted in the base face of the bushing. The positive electrode is a straight heavy wire of such composition as enables it to remain solid at all temperatures encountered in spark-plug service. The porcelain insulation surrounding the central electrode is substantial but not cumbersome, and the whole plug has a pleasing appearance.

### Endrick Motor Decompressor

Owners of automobiles with high compressions would in many cases gladly sacrifice a fraction of this feature if starting could thereby be made easier. To meet their wishes, the Endrick Engineering Company, Warwick Road, Olton, near Birmingham, England, has constructed a decompressor which may take the place of the priming cock, the latter being made obsolete by its use. The decompressor consists of a poppet valve shaped with a double face. The lower one is ordinarily pressed against its seat by a spring, while the upper one positively limits upward movement of the mushroom. The action of the decompressor, Fig. 1, is as follows: On the compression stroke the valve is slightly lifted and part of the compression is lost, and a slight leak is also encountered during the power stroke as well as the exhaust stroke. On the suction stroke the presence



of the decompressor does not influence the operating conditions in any way, so that the ratio of gasoline and air laid down by the adjustment of the carbureter is not altered due to the use of the decompressor.

### Montgomery Punctureproof Tire

One of the latest efforts to overcome punctures is the combination pneumatic and solid tire made by Harry B. Montgomery, Harrisburg, Pa. This tire, Fig. 2, consists of an inflatable tube of strong rubber, the inner portion of which is so shaped as to fit within the bead portion of the rim. Around the tube the solid rubber tread is arranged which bears in an annular depression of V-section. The thickness of the solid tread protects the inflated tube from punctures, while its rhomboidal cross-section insures the immunity of the tube against rim cutting, since practically all the pressure is applied along the V-shaped depression of the tube. If the tube is deflated the rim may be removed, its tight fit on the tube being but the result of the air pressure in the tube, forcing the outer wall of the same against the inner surface of the tread.

The tube is so far above the tread that the danger of its puncture is very slight as only a thrust from the side could reach it. This is almost impossible in regular running conditions. Owing to the enormous thickness of the casing it would be a long time before the wear from ordinary running began to show. It would be necessary to maintain the proper pressure in the inner tube in the same manner that it is required with the ordinary clincher type of tire. The solid rubber constituency of the outer shoe gives an added resiliency to the tire, it is claimed, and thus aids in absorbing a heavy shock without transmitting it to the body of the car and its occupants.

### Bousman Fuel Autofilter

Impurities of the gasoline, consisting both of foreign matter and water, are detrimental both in decreasing the efficiency of the fuel and necessitating a relatively large consumption of the same by the motor, but they also cause such acute troubles as stopping up a lead in the carbureter or the formation of a water trap in the line. It is therefore essential that pure gasoline only be fed to the carbureter, and for this purpose the Bousman Manufacturing Company, 18 Plainfield avenue, Grand Rapids, Mich., has constructed the Autofilter, Fig. 4. This is

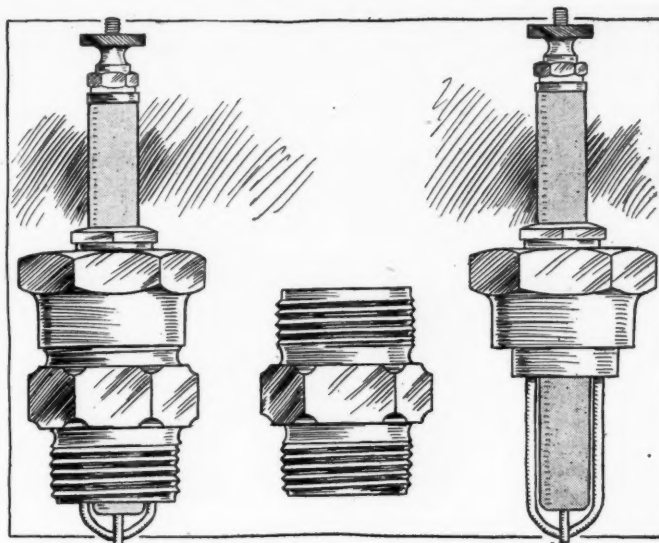


Fig. 3—Assembly of the Hartford heavy-duty spark plug

a highly polished bronze casing equipped with brass fittings and containing a fine wire gauze screen which is visible through a cylinder of heavy glass, making a tight fit with the bronze casing. The gasoline enters at a fitting which connects with the gasoline tank lead by a compression coupling and enters the space surrounding the filter cylinder. The pressure behind the gasoline forces it through the filter and out of the casing, while the water or foreign matter remains in the space which surrounds the filter, whence it may be drained by opening the cock. The view of the parts, Fig. 4, shows the construction of the details. The filter consists of a very fine mesh screen, inside of which a piece of filter fabric is placed. Inside this material there is another cylinder of wire screen, which, however, is coarser than the outside one. The fitting is on a level lower than the top of the filter cylinder, between which and the casing a tight fit is preserved through the sleeve, a highly machined and finished brass casing. The sleeve has eight small holes around its circumference, presenting passages between the interior and exterior of the cylinder and through which the pure gasoline which has passed through the filter may flow to the exit fitting. The bevel-shaped lower portion of the sleeve warrants an absolutely tight fit against the casing, while the same condition is obtained at the upper end of the sleeve by the contact with the interior of the cap. The filter may be attached at any suitable location by means of the plate which carries a clamp fitting around the casing that may be secured firmly in place by means of screws.

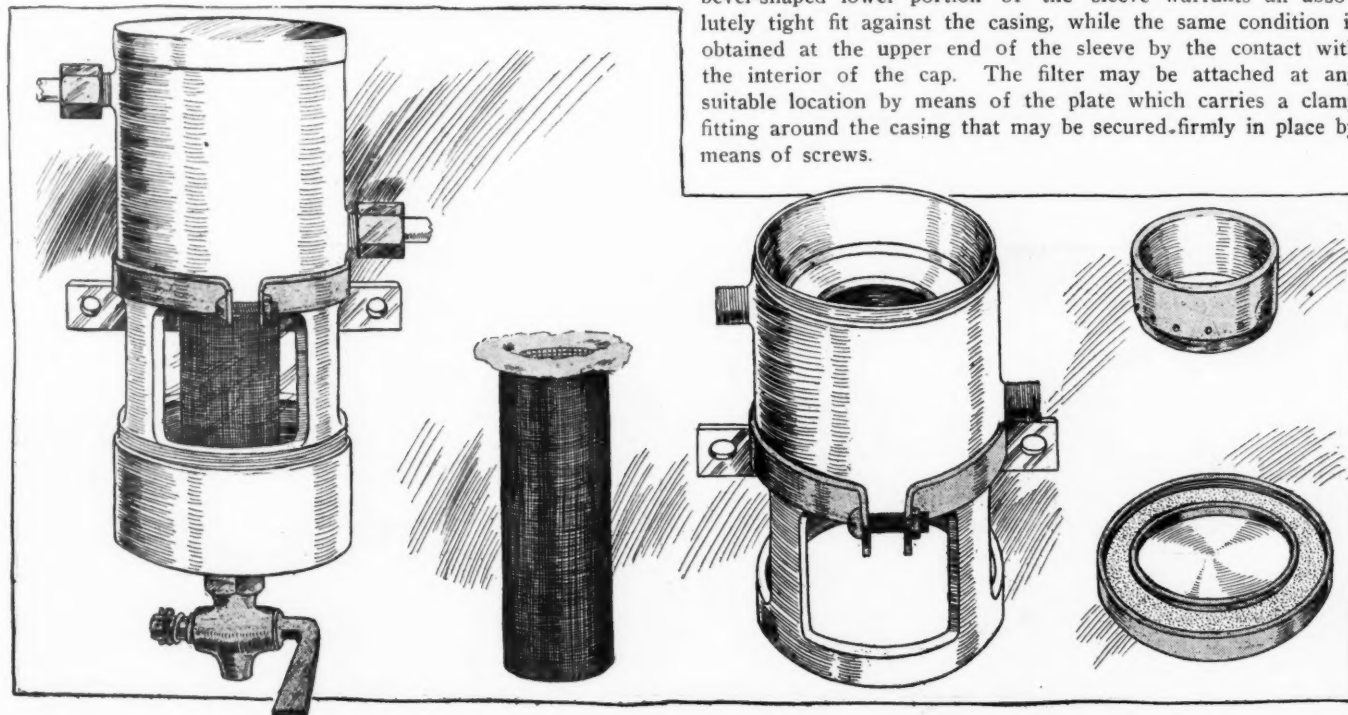


Fig. 4—The Bousman fuel Autofilter for removing foreign matter from the gasoline feed

# Patents Gone to Issue

**ELECTRIC Automobile Signal**—In which the sound is generated by a rotating ratchet and strengthened by an acoustic chamber.

Fig. 1 shows the subject matter of this patent, an electric signal. The sound is produced by a ratchet R engaging a projection of an acoustic chamber A which is inclosed in a casing C, provided with a resonator. The acoustic chamber A is not in direct contact with the casing.

No. 1,035,745—to Ernest Rubes, Brooklyn, N. Y. Granted August 13, 1912; filed January 11, 1911.

**Anti-Creeping Tire Device**—Which consists in a method of positively holding the inflating valve in a stationary position relative to the rim.

The patent refers to the combination of an inner tube having a strength-giving envelop on the inside, with a tube surrounding the first-mentioned tube and having a disk-like flange F, Fig. 2, which is positively held in place in the interior envelop. A portion of the flange is formed as a tube adapted to inclose an inflating valve V; this latter tube extends through the wheel rim and is threaded to receive a clamping nut N by means of which the valve can be securely held in position relative to the rim.

No. 1,036,085—to Clarence E. Falor, assignor to the Goodyear Tire & Rubber Company, Akron, O. Granted August 20, 1912; filed October 31, 1911.

**Carbureter for Automobile Motors**—In which two sleeve valves serve as auxiliary air inlets.

The carbureter described in this patent, Fig. 4, has a mixing chamber M in the lower part of which the nozzle N is located. The air entering through the primary inlet P and passing through the carbureter is regulated by the throttle T and the upper portion of the chamber M is formed with an annular port which, when the throttle is closed, is closed only by a sleeve S<sub>1</sub> connected to the throttle. A lower sleeve S<sub>2</sub> is connected to the first sleeve so as to be actuated in unison therewith and the lower end of S<sub>2</sub> is shaped with an outward flange to direct the incoming air toward the nozzle N. Therefore when the throttle is gradually opened more widely the sleeves come into action and a mixture of correct air-fuel proportion is produced.

No. 1,036,301—to Harry A. Miller, Los Angeles, Cal. Granted August 20, 1912; filed October 19, 1910.

**Self-Inflating Pneumatic Tire**—In which the inner tube is

composed of a number of sections inflated by a pump plunger which is actuated by the flexure of the tread when running.

The subject-matter of this patent is shown in Fig. 3, where R is the rim and C the outer casing of a tire. The inner tube is composed of a number of sections, each one of which has two abutting end plates E. These rest on plates P separating them. In the channel formed between the two tube ends a helical spring S is placed, one end of which is secured to P and the other a pump plunger P<sub>1</sub> capable of reciprocating on a cylinder C<sub>1</sub>. This cylinder is reciprocated when the plate P passes through its lowest position, whereby air is pumped into the cylinder whence it is forced into one of the two sections.

No. 1,035,283—to Frank F. Wear, San Francisco, Cal. Granted August 13, 1912; filed November 23, 1910.

**Cushion Device for Automobiles**—In which oil and air are used to absorb shocks by passing through a dashpot arrangement.

One of the principal claims of this patent refers to the combination of a packed sliding joint formed by two telescoping members, Form S. A constriction is provided about midway between the ends of the two members when fully extended. The chamber formed by the two telescoping parts contains a pump the inlet of which is in operative connection with the sliding joint and the discharge of which connects with the chamber, the constriction giving rise to the operation of the pump.

No. 1,036,043—to George Westinghouse, Pittsburgh, Pa. Granted August 20, 1912; filed September 28, 1909.

**Internal Combustion Motor**—Which compresses pure air in the crankchamber, the quantity of fuel being mixed with it depending on the suction created in the cylinder during the up-stroke of the piston.

This patent relates to a two-cycle motor, of the following construction: The cylinder and crankcase are so connected as to form a gas-tight space in which air entering through a valve-controlled port is compressed, when the engine piston is on the out-stroke. At the end of this stroke the compressed air is forced through a passage and inlet port into the cylinder. On the up-stroke the port is closed and the evacuation of the crankchamber draws in fuel from the reservoir.

No. 1,035,513—to Gustav A. F. Ahlberg, Chicago, Ill. Granted August 13, 1912; filed November 28, 1910.

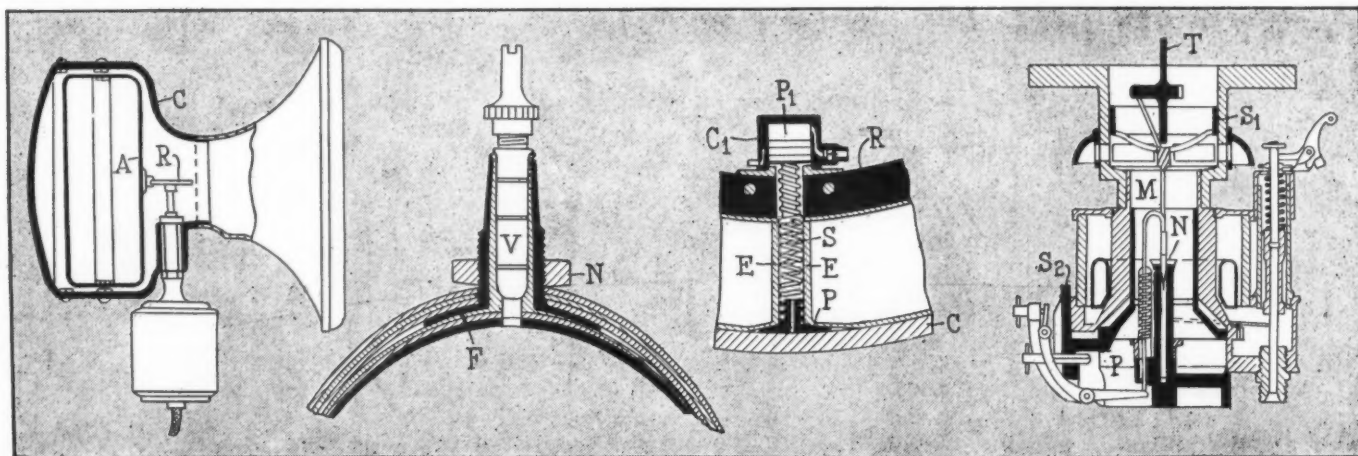


Fig. 1—Rubes electric horn. Fig. 2—Falor anti-creeping device. Fig. 3—Wear self-inflating tire. Fig. 4—Miller carburetor